NOTRE DAME UNIVERSITY
LOUAIZE
جامعة سيدة اللويزة
GAUDIUM DE VERITATE

CATALOG | 2024-2025

Catalog 2024-2025

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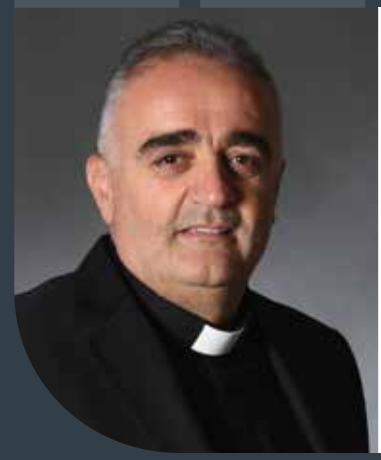

MESSAGE FROM THE **PRESIDENT**

As we embark on a new academic year, I am reminded of the profound impact that education has on our lives, our society, and our world. Education is not merely a pathway to personal and professional success; it is a beacon of hope, a source of strength, and a tool for transformation. In times of crisis and uncertainty, it empowers us to rebuild and reimagine a brighter future. In an increasingly fast-paced digital age, focus is essential to reach our goals, and in a world of abundant information, connecting with ourselves is key to achieving these objectives.

At Notre Dame University-Louaize (NDU), we are committed to fostering an environment where learning flourishes and where students are equipped with the knowledge, skills, and values needed to navigate and overcome the challenges of our times. With our growing number of institutional and programmatic accreditations, NDU stands alongside other prominent universities globally, reflecting a high standard of education across all areas.

Our large and serene campus provides the ideal atmosphere for productivity and inspiration. Whether in a theater that hosts international conferences, an outdoor stadium that witnesses national games, or in the Middle East's largest observatory, students are surrounded by opportunities to learn and grow. Beyond academics, NDU's commitment

to community engagement helps cultivate compassionate and cooperative minds, enhancing emotional intelligence and preparing students to become better individuals in any workplace.

To our new and current students, I say this: believe in yourselves; your potential is boundless, and your contributions are vital. Passion is the driving force that will keep you moving forward and excelling. Embrace the advanced tools and knowledge offered at NDU, and learn from our experienced tutors. From your first day at university, you are building a legacy that will continue to grow as you develop academically, personally, and professionally.

Consider the education you receive at NDU not just as a means to an end, but as a lifelong journey. It is through education that we can preserve our heritage while forging a future of progress and prosperity. Our heritage—whether in knowledge or possessions—is a treasure passed down from our ancestors, a treasure we must protect and optimize. While I encourage you to explore the world and seize every learning opportunity, it is here, in our homeland, that we must truly invest for better days to come and for future generations.

Thank you for being part of the NDU family. Together, we will continue to uphold our values, pursue excellence, and make a positive impact on our world.

Fr. BECHARA KHOURY, O.M.M.
President

UNIVERSITY DIRECTORY 2024-2025

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Abbot Boutros Tarabay, University Chaplain
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Fr. Abdo Antoun, University Chaplain
Fr. Antoine Honein, University Chaplain NLC
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Ms. Milena Zgheib, Nurse

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Ms. Itab Chebli, Administrative Assistant to the University Librarian

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Ms. Pina Ghsoub, Department Head - Reference and Outreach

Department of Access Services
Ms. Julienne Abboud, Department Head - Access Services
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Mr. Georges Mghayar, Assistant Librarian - Stacks Control

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Ms. Carole Chedid, Assistant Librarian - Cataloging and Metadata

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Ms. Maya Tannous, Department Head E-Resources and Serials

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Ms. Grace Baroud, Assistant Specialist - Special Collections
Ms. Zeina Fahed, Assistant Specialist - Special Collections

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Ms. Dany Nasr, Assistant Librarian - Gifts and Exchange

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Dr. Amine Moussa, Department Head - Information Technology

Department of Archives and Digitization
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Mr. Charbel Dia, Assistant Librarian - Archives and Digitization
Ms. Talin Agop, Assistant Librarian - Archives and Digitization

Institute of Lebanese Thought
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Ms. Vera Jabbour, Officer - ILT Research

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Ms. Joyce Ghossain, Associate Director
Ms. Michele El Khoury, Officer

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Office of Information Technology
Ms. Nathalie El Kallassi Rechdan, Executive Director, Information Technology

Department of Infrastructure and Support
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Mr. Ziad Azzi, Assistant Director
Mr. Bachir Abou Halloun, Head, Technical Support
Mr. Anthony Rizk, Junior Helpdesk
Mr. Charbel Badr, Senior HelpDesk
Mr. Rawad Khalil, Junior HelpDesk
Mr. Mathios Bou Gharrios, Junior HelpDesk
Mr. Elio Khairallah, Junior HelpDesk

Department of Applications and Software Development
Ms. Nathalie El Kallassi Rechdan, Director
Mr. Antoine Saber, System Analyst and Programmer
Mr. Georgio Semaan, Senior Programmer
Ms. Mariella Badawi, Programmer
Mr. George Azzi, Programmer
Ms. Jessica El Chater, Junior Programmer

Department of Network and Security
Mr. Jimmy Aintabi, Director
Mr. Fadi Khalil, Assistant Director
Mr. Pierre Hajj Youssef, Network Support Specialist

Department of e-Learning
Dr. Dany Azzi, Director
Ms. Brigitta Kassis Akiki, Assistant Director
Ms. Sahar Nassar Madi, Senior Instructional Designer

Office of Campus Services
Mr. Sayed Ghossain, Director
Ms. Diala El Mast, Administrative Assistant to the Director

Department of General Services
Mr. Elie Najem, Assistant Director, General Services
Ms. Carol Habchi, Senior Officer, General Services
Mr. Nehme Nassif, Officer, Mail Services
Mr. George Adem, Driver
Mr. Michael Antoun, Driver

Mr. George Charara, Driver
Mr. Pierre Khoueiry, Driver
Mr. Joseph Azzi, Driver
Mr. Georges Mhanna, Officer, Classroom Services
Mr. Elie Yammine, Junior Officer, Classroom Services
Ms. Lena Tikijian Makhoul, Information Desk Operator
Ms. Rima Khalil, Clerk, Housekeeping Services
Ms. Josephine Ghsoub, Clerk, Housekeeping Services
Ms. Karunawathie Gunasekara, Clerk, Housekeeping Services

Department of Security Services
Mr. Georges Tahtah, Senior Officer, Security Services

Department of Warehousing
Mr. Edward Nakhle, Senior Officer, Warehouse
Mr. Charles Abi Nader, Senior Officer, Receiving
Mr. Mario Kozaily, Senior Officer, Supply Chain and Logistics
Mr. Bassam Merheb, Senior Officer, Sub-Warehouse
Mr. Mansour Abi Aoun, Officer, Inventory

Office of Physical Plant
Mr. Pierre Azar, Director
Ms. Gisele Mrad Ghanem, Administrative Assistant to the Director
Mr. Pachiyappan Muthukkama, Worker
Mr. Gursewark Singh, Worker
Mr. Mads Love Prett Singh, Worker

Department of Grounds Inspection
Mr. Joseph Bou Nassif, Senior Grounds Inspector

Department of Maintenance
Mr. Elias Assad, Head
Mr. Francois Kaï, Technician
Mr. Sleiman Merhej, Technician
Mr. Michel Tannous, Technician
Mr. Jean Khater, Technician
Mr. Rabih Hamouch, Technician
Mr. Charbel Sleiman, Technician

Department of Landscaping
Mr. Maher Ghostine, Assistant Director
Mr. Nemer Ghanem, Gardener
Mr. Marwan Beyrouthy, Gardener
Mr. Assaad Wehaibe, Gardener
Mr. Amine Chalitta, Gardener
Mr. Tony Ghanem, Gardener
Mr. Charbel Ghadsar, Gardener

OFFICE OF FINANCE

Fr. Pierre Ghsoub, Acting Vice President for Finance
Ms. Danielle Abboud, Executive Assistant to the Acting Vice President for Finance
Mr. Pierre Abi Warde, Director of Finance

Business Office
Ms. Rita El Saliby, Senior Officer, Business Office
Ms. Rola Ghorra, Senior Accountant
Mr. Charbel Khairallah, Accountant
Mr. Ghassan Khalil, Junior Accountant
Ms. Mary Joe Al Makary, Junior Accountant

Department of Budget and Financial Analysis
Dr. Cynthia Jabbour Sfeir, Head of Budget and Financial Analysis
Ms. Rea Zachariades, Financial Analyst
Mr. Maroun Mhanna, Officer, Operational Services

Office of Procurement
Mr. Eddy Lteif, Director
Ms. Claire Hoballah, Senior Officer
Mr. Fady Bteich, Senior Officer
Mr. Elias Fattouh, Senior Officer
Mr. Khattar Hajj, Junior Officer

OFFICE OF UNIVERSITY ADVANCEMENT

Dr. Antoine Farhat, Vice President for University Advancement
Ms. Jihane Keyrouz, Executive Assistant to the Vice President for University Advancement

Office of Business Strategy and Advancement
Mr. Alain Abou Jaoude, Director
Ms. Chirine Beainy, Administrative Assistant
Ms. Yolla Chalhoub, Senior Officer, Alumni Affairs
Ms. Amira Hanna, Junior Officer, Corporate and Partnership Relations

Office of Marketing
Dr. Lara Khabbaz, Director

Office of Communications
Mr. André Fahed, Director
Ms. Rachel Moufarrej Shoucair, Associate Director

Department of Public Relations
Ms. Joanna Chaaya, Senior Officer, Digital Media
Ms. Stephany Abi Aad, Officer, Social Media
Ms. Aline Sfeir, Writer
Ms. Elsa Gerges, Junior Writer

Department of Creative Design
Ms. Nicole Milan, Associate Creative Director
Ms. Rania Daghfal, Art Director
Ms. Maguy Sawma, Senior Creative Editor
Mr. Anthony Saad, Graphic Designer
Mr. Jack Sawma Awad, Graphic Designer
Ms. Reine Saab, Junior Graphic Designer

Department of Events Management
Ms. Rania Zeidan, Assistant Director
Ms. Sanaa Youssef, Officer
Mr. Nicolas Haddad, Junior Officer
Mr. Charbel Tarabay, Officer, Operations
Mr. Melhem Bou Chebl, Officer, Archiving
Mr. Charbel Francis, Officer, Sound
Ms. Nathalie Nasr, Photographer
Mr. Abdo Bejjani, Photographer
Mr. Milo Ghanem, Videographer
Ms. Fatima Arafat, Clerk, Housekeeping Services

Office of Public Affairs and Protocol
Mr. Majed Bou Hadir, Director
Ms. Joceline Chidiac Jade, Assistant Director

Department of Public Affairs
Ms. Suzanne Saadeh, Senior Officer, Public Affairs
Ms. Zeina Khalil, Senior Officer, Media Relations

NDU Career Center
Ms. Karla Sfeir, Director
Ms. Sandra Khoury, Officer
Ms. Christelle Kreidy, Officer

FACULTIES

RAMEZ G. CHAGOURY FACULTY OF ARCHITECTURE, ARTS AND DESIGN

Dr. Karen Bou Jaoude Khoury, Dean
Ms. Janane Younes, Senior Administrative Assistant to the Dean

Department of Architecture
Dr. Hani Zgheib, Chairperson
Ms. Claude Khalaf, Administrative Assistant to the Chairperson

Department of Design
Mr. Salim Akl, Chairperson
Ms. Adelle Dib, Administrative Assistant to the Chairperson
Mr. Cliff Makhoul, Senior Laboratory Assistant

Department of Music
Ms. Dolcy Lawoun, Chairperson

FACULTY OF BUSINESS ADMINISTRATION AND ECONOMICS

Dr. Viviane Naimy, Dean
Ms. Maya Rashed, Senior Officer, Accreditation
Ms. Ghada Cattan, Senior Administrative Assistant to the Dean
Ms. Rita Khalil, Secretary to the Dean

Department of Accounting and Finance
Dr. Roy Khoueiry, Chairperson
Ms. Kamale Moubarak, Administrative Assistant to the Chairperson

Department of Economics
Dr. Roy Khoueiry, Chairperson
Ms. Kamale Moubarak, Administrative Assistant to the Chairperson

Department of Hospitality and Tourism Management
Dr. Mirna Kordab, Chairperson
Ms. Dunia Akiki, Administrative Assistant to the Chairperson

Department of Management and Marketing
Dr. Marwan Azouri, Chairperson
Ms. Grace Kanaan, Administrative Assistant to the Chairperson

FACULTY OF ENGINEERING

Dr. Jacques Harb, Dean
Ms. Jeanette Elias, Senior Administrative Assistant to the Dean

Department of Civil and Environmental Engineering
Dr. Talal Salem, Chairperson
Ms. Norma Kaloush, Administrative Assistant to the Chairperson
Mr. Elie Lahoud, Senior Laboratory Technician

Department of Electrical, Computer, and Communication Engineering
Dr. Elias Nassar, Chairperson
Ms. Pauline Nohra, Administrative Assistant to the Chairperson

Department of Mechanical Engineering
Dr. Charbel Bou Mosleh, Chairperson
Ms. Ghada Khoury, Administrative Assistant to the Chairperson
Mr. Fady Awad, Senior Laboratory Technician

FACULTY OF HUMANITIES

Dr. Maria Bou Zeid, Dean
Ms. Wassil Chemaly, Senior Administrative Assistant to the Dean

Department of English and Translation
Dr. Maya El Hajj, Chairperson
Ms. Rita Hakim, Administrative Assistant to the Chairperson

Department of Media Studies
Dr. Joseph Hosni, Chairperson
Ms. Celine Abi Aoun, Administrative Assistant to the Chairperson

Division of Audio Visual Arts
Mr. Pierrot Haddad, Director
Ms. Sarah Gabriel, Senior Officer, Students and Faculty Assistance
Mr. Maroon Salloum, Junior Officer, Students and Faculty Assistance
Mr. Ribal Abi Raad, Junior Officer, Equipment and Labs
Mr. Jad Obeid, Junior Project Developer

Department of Psychology, Education and Physical Education
Fr. Joseph Tannous, Chairperson
Ms. Maya Lahoud, Administrative Assistant to the Chairperson

Department of Religious, Cultural and Philosophical Studies
Ms. Pamela Azouri, Chairperson
Ms. Maya Lahoud, Administrative Assistant to the Chairperson

Benedict XVI
Dr. Edward Alam, Benedict XVI Endowed Chair
Ms. Honoree Eid, Administrative Assistant to the Benedict XVI Endowed Chair

FACULTY OF LAW AND POLITICAL SCIENCE

Dr. Dany Samaha, Dean
Ms. Eliana Yazbeck Kosseify, Senior Administrative Assistant to the Dean
Ms. Eugenie Haddad Azar, Administrative Assistant to the Dean

Department of Law
Dr. Dany Samaha, Chairperson

Department of Government and International Relations
Dr. Nehmeh Al Khawly, Chairperson

Lebanese Research Center for Diaspora and Migration Studies
Dr. Eugene Sensenig, Director
Ms. Liliane Haddad, Senior Indexer and Archivist
Ms. Maria El Naddaf, Junior Officer

FACULTY OF NATURAL AND APPLIED SCIENCES

Dr. Roger Nakad, Dean
Ms. Nelly Geara Nakad, Senior Administrative Assistant to the Dean

Department of Computer Science
Dr. Pierre Akiki, Chairperson
Ms. Nicole Antoun, Administrative Assistant to the Chairperson

Department of Mathematics and Statistics
Dr. Mariette Maroun, Chairperson
Ms. Jessica Saba, Administrative Assistant to the Chairperson

Department of Physics and Astronomy
Dr. Bassem Sabra, Chairperson
Ms. Salma Abou Abdo, Administrative Assistant to the Chairperson

Department of Sciences
Dr. Rita Maalouf, Chairperson
Ms. Salma Abou Abdo, Administrative Assistant to the Chairperson
Ms. Elizabeth Saliba Tabet, Laboratory Assistant
Ms. Rêve Berberi Richa, Laboratory Assistant

FACULTY OF NURSING AND HEALTH SCIENCES

Dr. Jessy El Hayek, Dean
Ms. Nathalie Fahed Mozaya, Senior Administrative Assistant to the Dean

Department of Nursing and Health Sciences
Ms. Maya Abou Jaoude, Chairperson

NDU - NORTH LEBANON CAMPUS

OFFICE OF THE CAMPUS DIRECTOR

Fr. François Akl, Campus Director
Ms. Nancy Rizk Diab, Executive Assistant to the Campus Director

Campus Ministry
Fr. Antoine Honein, University Chaplain NLC

OFFICE OF ACADEMICS AFFAIRS

Office of the Registrar
Mr. Jean Malkoun, Head

Office of Admissions
Mr. Raymond Khoury, Senior Officer
Ms. Christina Yammine Makary, Officer

Office of Student Affairs
Ms. Nada Moussallem Bou Francis, Officer

NDU Libraries
Ms. Carina Hawat Mansour, Specialist - Head
Ms. Suzanne Doumit Saad, Library Assistant

RAMEZ G. CHAGOURY FACULTY OF ARCHITECTURE, ARTS AND DESIGN

Ms. Tamara Ibrahim Saad, Coordinator
Ms. Rosalina Issa, Administrative Assistant

FACULTY OF BUSINESS ADMINISTRATION AND ECONOMICS

Dr. Dorine Matar Haddad, Coordinator
Ms. Elsy Kfoury Girgis, Administrative Assistant

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Dr. Chady El Moucary, Coordinator
Ms. Rena Ayoub Nicolas, Senior Administrative Assistant

FACULTY OF HUMANITIES

Mr. Michael Hajj, Coordinator
Ms. Rosalina Issa, Administrative Assistant
Mr. Samer El Achy, Supervisor, Division of Audio Visual Arts

FACULTY OF NATURAL AND APPLIED SCIENCES

Dr. Simona Sawan, Coordinator
Ms. Rana Naynou Nabbout, Senior Laboratory Assistant
Ms. Rena Ayoub Nicolas, Senior Administrative Assistant

FACULTY OF NURSING AND HEALTH SCIENCES

Dr. Samar Merhi, Coordinator
Ms. Rana Naynou Nabbout, Senior Laboratory Assistant
Ms. Elsy Kfoury Girgis, Administrative Assistant

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Office of Campus Services
Mr. Tony Ayoub, Driver
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Mr. Miled Daou, Driver
Mr. Wassim Fayjaloun, Driver
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Ms. Jana Issa Fayjaloun, Operator, Front Desk Services

Office of Physical Plant
Department of Maintenance
Mr. Roy Atieh, Senior Officer

Department of Landscaping
Mr. Tony Bou Feraa, Gardener

Office of Information Technology
Mr. Charbel Merheb, Head

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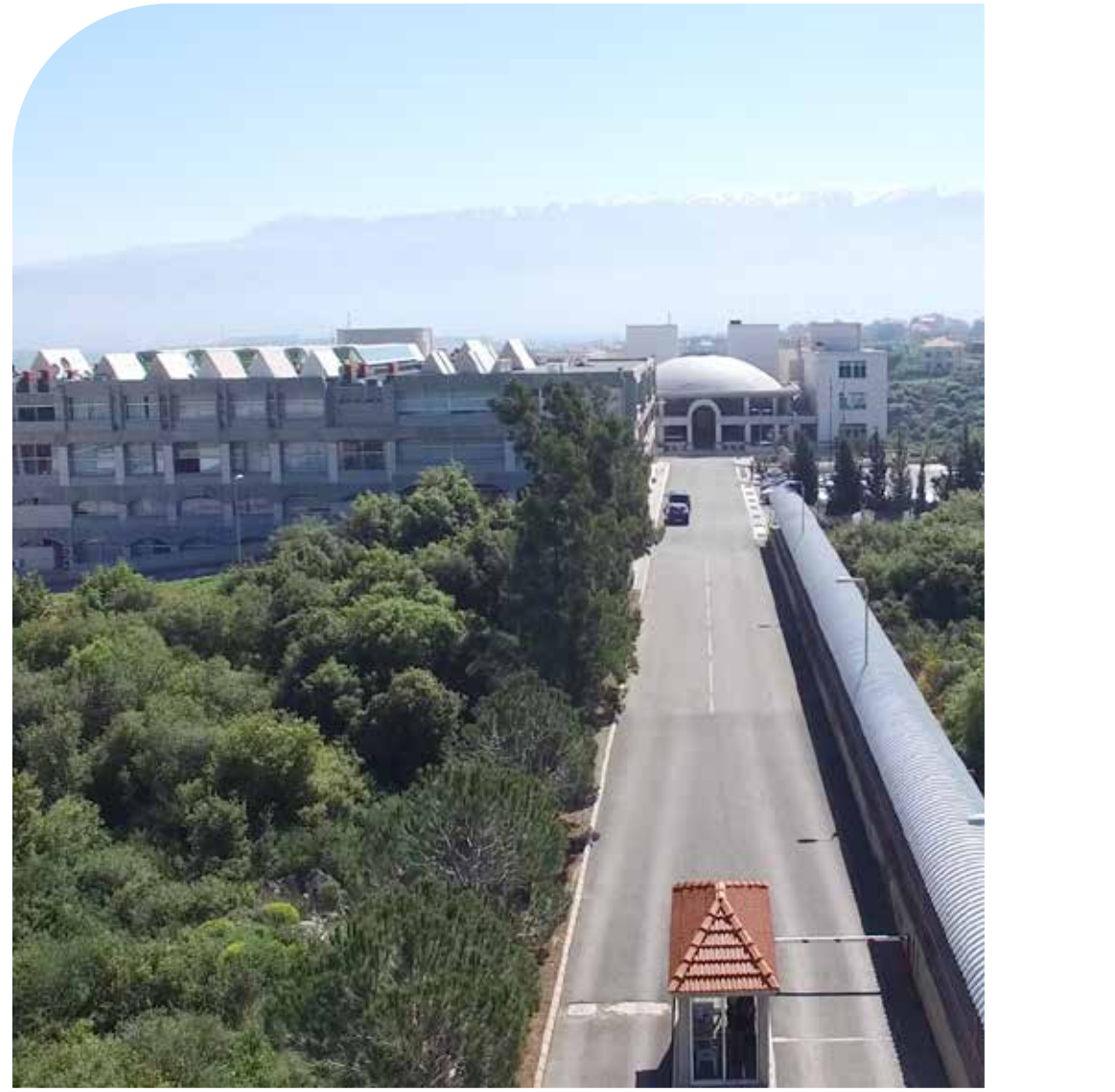
Ms. Rita Daher, Officer

OFFICE OF UNIVERSITY ADVANCEMENT

Ms. Elsy Kfoury Girgis, Officer

OFFICE OF PUBLIC AFFAIRS AND PROTOCOL

Mr. Raymond Khoury, Officer



NDU - SHOUF CAMPUS

OFFICE OF THE CAMPUS DIRECTOR

Fr. Walid Moussa, Campus Director
Mr. Elie Bou Abdo, Assistant Director
Ms. Marie Reine Bou Nassif Mina, Administrative Assistant to the Campus Director

Campus Ministry
Fr. Walid Nassif, University Chaplain

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Ms. Nancy Khoury Jurdy, Officer
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Office of Admissions
Ms. Souhad Abi Zaki, Senior Officer
Ms. Sahar Abboud Moussa, Officer
Ms. Mayssam Bou Hamdan, Officer

Office of Student Affairs
Ms. Rita Habib Khalil, Officer
Mr. Jack Bou Nassif, Activities Coordinator

Department of Counseling and Health
Dr. Youssef Boueiz, Physician

Department of Social Security
Mr. Refaat Nasr, Junior Officer

NDU Libraries
Ms. Denise Nassif Saad, Library Assistant

RAMEZ G. CHAGOURY FACULTY OF ARCHITECTURE, ARTS AND DESIGN

Ms. Claudine Chamoun, Coordinator
Ms. Marina Bou Karroum Beainy, Secretary

FACULTY OF BUSINESS ADMINISTRATION AND ECONOMIC

Dr. Talie Kassamany, Coordinator
Ms. Marina Bou Karroum Beainy, Secretary

FACULTY OF ENGINEERING

Dr. Mustapha Hamad, Coordinator
Ms. Siham Antoun Chalhoub, Secretary

FACULTY OF HUMANITIES

Mr. Vatche Donerian, Coordinator
Ms. Marina Bou Karroum Beainy, Secretary

FACULTY OF NATURAL AND APPLIED SCIENCES

Dr. Joanna Choufani, Coordinator
Ms. Siham Antoun Chalhoub, Secretary

FACULTY OF NURSING AND HEALTH SCIENCES

Ms. Darine Mahmoud, PT member, Coordinator
Ms. Siham Antoun Chalhoub, Secretary

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Mr. Nassir Najem, Senior Officer
Mr. Tony Daoud Moussa, Officer

Office of Campus Services
Ms. Jeanette Younes, Junior Officer
Mr. Kozhaya Richa, Driver
Mr. Sami Younes, Driver
Ms. Roula Khattar Antoun, Operator, Front Desk Services
Mr. George Habib, Guard, Security Services
Mr. George Nader, Guard, Security Services
Mr. Saiid Yazbek, Guard, Security Services
Mr. Fadi Antoun, Guard, Security Services
Mr. Charbel Habib, Guard, Security Service
Mr. Edward Lahoud, Guard, Security Services
Ms. Jihane Bou Abdo Mouawad, Clerk, Housekeeping Services
Ms. Daed Bou Nassif, Clerk, Housekeeping Services
Ms. Maya Nehme Atallah, Clerk, Housekeeping Services
Ms. Rita Razzouk Daoud, Clerk, Housekeeping Services
Ms. Samira Saadallalh, Clerk, Housekeeping Services

Office of Physical Plant

Department of Maintenance
Mr. Toni Bou Abdo, Junior Officer
Mr. Louis Saadeh, Junior Officer

Department of Landscaping
Mr. Dib Haddad, Gardener
Mr. Abdo Mghames, Gardener
Mr. Tony Kamel, Gardener
Mr. Bachir Bou Sleiman, Gardener

OFFICE OF FINANCE

Business Office
Mr. Elie Bou Abdo, Assistant Director

OFFICE OF UNIVERSITY ADVANCEMENT

Office of Communications
Mr. Jack Bou Nassif, Activities Coordinator

Career Center
Mr. Ayman Bou Hamdan, Officer

LIST OF FULL-TIME FACULTY MEMBERS 2024-2025

Professors

Aad, Pauline, Ph.D., 2008, Animal Breeding and Reproduction, Oklahoma State University, USA
Abouchedid, Kamal, Ph.D., 1997, Education, Manchester University, UK
Alam, Edward, Ph.D., 1997, Philosophy, University of Utah, USA
Asmar, Ghazi, Ph.D., 1998, Mechanical and Aerospace Engineering, University of Missouri, USA
Bou-Mosleh, Charbel, Ph.D., 2005, Mechanical Engineering, University of Colorado, USA
Doumit, Jaqueline, Doctorate, 1996, Biomedical Engineering, Université de Saint-Etienne, France
Eid, George M., Ph.D., 1988, Mathematics, Polytechnic University, USA
El Hayek, Michel, Docteur Européen, 1997, Sciences Appliquées, Faculté Polytechnique de Mons, Belgium
Fahed, Ziad, Doctorate, 2001, Théologie Canonique, Université Catholique de Lyon, France
Farhat, Antoine, Ph.D., 1999, Nutrition, McGill University, Canada
Georges, Semaan, Ph.D., 2001, Electrical Engineering, Ecole de Technologie Supérieure, Canada
Hamad, Mustapha, Ph.D., 1995, Electrical Engineering, University of South Florida, USA
Hamadi, Hassan, Ph.D., 2005, Finance, University of Surrey, UK
Harb, Jacques, Ph.D., 1996, Civil Engineering, Northeastern University, USA
Hawi, Nazir, Ed.D., 2008, Education, University of Leicester, UK
Jahshan, Paul, Ph.D., 2000, American Studies, Nottingham University, UK
Kassem, Abdallah, Ph.D., 2005, Electrical Engineering, Ecole Polytechnique de Montreal, Canada
Khoury, Bechara (Fr.), Doctorate, 2011, Economics, Université de Dijon, France
Maalouf, Hoda, Ph.D., 1998, Communication Engineering, Imperial College, University of London, UK
Matar Haddad, Dorine, Ph.D., 2006, Management, University of Leicester, UK
Nassar, Elias, Ph.D., 1997, Electrical Engineering, The Ohio State University, USA
Naimy, Viviane, Doctorate, 2001, Sciences Economiques et de Gestion, Université de Paris XI, France
Sabieh, Christine, Doctorate 1ère Catégorie, 1998, Philosophie et Sciences Humaines, Holy Spirit University of Kaslik, Lebanon
Sabra, Bassem, Ph.D., 2000, Physics, Ohio University, USA
Saliba, Holem, Ph.D., 1997, Physics and Mathematics, Moscow State University, Russia
Sensenig, Eugene, Ph.D., 1985, Political Science and German Literature, Paris-Lodron-Universität, Salzburg, Austria
Zgheib, Charbel, Doctorate, 2005, Physics of Condensed Matter, University of Montpellier II, France

Associate Professors

Abdallah, Salma, 2010, Doctorate, Arabic Language & Literature, Lebanese University, Lebanon
Abou Jaoudé, Abdo, Doctorate, 2012, Applied Mathematics, Lebanese University and University D'Aix, Marseille, France
Akiki, Pierre, Ph.D., 2014, Computing, The Open University, UK
Akl, François, (Fr.), Doctorate, 2002, Canon Law, Pontificia Universitas Lateranensis-Rome, Italy
Antaby, George (Fr.), Doctorate, 2008, Philosophy, University of Ottawa, Canada
Aoun, Antoine, Doctorate, 2010, Nutrition, Universite de Rouen, France & MD, 2005, Family Medicine, USJ, Lebanon
Atallah, Jad, Ph.D., 2008, Electrical & Computer Systems, Royal Institute of Technology, Sweden
Badr, Layla, Ph.D., 2010, Natural Sciences, Westfalische Wihelms Universitat, Germany
Baroud, Fawzi, Ph.D., 2011, Educational Technology-eLearning, Sheffied Hallam University, UK
Bou Jaoude Khoury, Karen, DBA, 2012, Business Administration, Grenoble Ecole de Management, France
Bou Mitri, Christelle, Ph.D., 2013, Food Science, McGill University, Canada
Bou Zeid, Maria, Doctorate, 2010, Media & Communications, University Paris II, France
Chakar, Elie, Doctorate, 1994, Sciences et Techniques du Bâtiment, Ecole Nationale des Ponts et Chaussées, France
Chibani, Wessam, Ed.D., 2011, Education, Saint Louis University, Missouri, USA
Chidiac, May, Doctorate, 2008, Information Sciences, Université Pantheon-Assas Paris II, France
El Hajj, Maya, Doctorate, 2009, Science of Language: Translation, Holy Spirit University of Kaslik, Lebanon
El Hayek, Jessy, Ph.D., 2011, Nutrition and Dietetics, McGill University, Canada
El-Khaldi, Khaldoun, Doctorate, 1996, Computer Science, Université de Franche-Comté, France
El Khoury, Akram (Fr.), Doctorate, 2006, Canon Law, Pontificia Universitas Lateranensis-Rome, Italy
El Khoury, Jessica, Ph.D., 2014, Mass Communication, Texas Tech. University, USA
El Moucary, Chady, Doctorate, 2000, De Génie Electrique, Université de Paris XI, France
Feghali, Elias, Doctorate, 2015, Chemistry, University Paris XI, France
Ghalayini, Bassem, Ph.D., 1995, Applied Mathematics, University of California, USA
Ghanem, Esther, Ph.D., 2010, Cell Biology, Jacobs University, Germany
Ghsoub, Dany, Doctorate, 2007, Public Law, Universite Jean Moulin Lyon 3, France
Hage, Ilige, Ph.D., 2015, Mechanical Engineering, American University of Beirut, Lebanon
Hage, Remi, Doctorate, 2012, Applied Math, University de Nantes, France
Hage, Tanos G., Ph.D., 1995, Plant Biochemistry and Molecular Biology, Pennsylvania State University, USA
Harb, Atef, Ph.D., 1996, Applied Sciences, Ecole Polytechnique de Montreal, Canada
Hindi, Nadine, Ph.D., 2015, Public Space and Urban Regeneration, University of Barcelona, Spain
Issa, Joseph, Ph.D., 2012, Computer Engineering, Santa Clara University, USA
Kabrita Bou Serhal, Colette, Ph.D., 1998, Biology (Circadian Rhythms, Neurobiology), Northeastern University, Boston, USA
Kassamany, Talie, Ph.D., 2014, Business Administration, Kingston University-London, UK
Kairouz, Kaissar, Doctorate, 2013, Sciences and Techniques of Physical and Sports Activities, Universite Rennes 2, France
Keirouz, Malhab, Ph.D., 1991, Mathematics, Purdue University, USA
Khabbaz, Nicolas, Ph.D., 2014, Visual Performing Arts, Holy Spirit University of Kaslik, Lebanon
Khair, Marie, Doctorate, 1996, Computer Science, Aristotle University of Thessaloniki, Greece
Khalaf Keirouz, Leila, Doctorate, 1995, Environmental Geology, Westfälische Wilhelms-Universität, Germany
Khalil, Sandra, Doctor of Business Administration, 2015, Accounting, Grenoble Ecole de Management, France

Khoueiri, Roy, Doctorate, 2003, Economics, Universite Paris 13, Paris Nord, France
Maalouf, Rita, Doctorate, 2006, Analytical Sciences, Claude Bernard University Lyon 1, France
Mady, Christy, Ph.D., 2016, Communication, Carleton University, Canada
Malkoun, Joseph, Ph.D., 2012, Mathematics, State University of New York, USA
Maroun, Mariette, Ph.D., 2006, Mathematics, Baylor University, USA
Melki, Habib, Ph.D., 2014, Arts in History, Holy Spirit University of Kaslik, Lebanon
Mendalek, Nassar, Ph.D., 2003, Electrical Engineering, Ecole de Technologie Superieure, Canada
Nakad, Roger, Doctorate, 2011, Mathematics, Université Henri Poincare, Nancy I, France
Nasr, George, Dr. of Eng., 1997, Civil Engineering, Texas A & M University, USA
Nassif, Nadim, Doctorate, 2013, Sports Sociology, University of Grenoble, France
Rached, Ziad, Ph.D., 2002, Mathematics, Queen's University, Canada
Rahme, Chady, Ph.D., 2011, Philosophie et Science Humaines, Holy Spirit University of Kaslik, Lebanon
Salem, Talal, Doctorate, 2007, Civil Engineering, Institut National des Sciences Appliquées de Lyon, France
Samaha, Dany, Doctorate, 2001, Comparative Law, University Pantheon-Assas, Paris II, France
Samaha, Maya, Doctorate, 2009, Computer Science, Université Lyon 1, France
Sleilati, Esther, D.B.A., 2011, Marketing, Grenoble Ecole de Management, Grenoble, France
Younes, Farid, Ph.D., 1997, Aménagement, Université de Montréal, Québec, Canada
Zehil, Gerard Philippe, Ph.D., 2013, Civil Engineering, Duke University, USA
Zgheib, Hani, Doctorate, 2001, Engineering: Living Environmental Studies, Kyushu University, Japan
Zgheib, Youssef, Ph.D., 2002, International Hospitality Management, University of Strathclyde, Scotland, UK

Assistant Professors

Abdelnour, George, Ph.D., 1997, Spanish, Yale University, USA
Abou Jawdeh, Simon, Doctorate, 2015, Psychology, University Caen Normandie, France
Akiki, Paul, Ph.D., 2023, Computer Science, The Open University, UK
Akl, May, Doctorate, 2009, Translation Studies, St. Joseph University, Lebanon
Al-Khawly, Nehme, Ph.D., 2021, Political Economy, Universitat Rovira I Virgili, Spain
Al Khoury, Vanessa, Doctorate, 2021, Business Administration, Universite Jean Monnet-Saint-Etienne, France
Al Watchi Al Hayek, Sibelle W., Ph.D., 2021, Medical Nutrition Science, The University of Kansas, USA
Azouri, Marwan, Doctorate, 2017, Business Administration, Université Bourgogne, France
Badr, Georges, Doctorate, 2021, Economics, Universite Grenoble Alples, France
Bitar, Nicolas, Ph.D., 2005, International Finance and Economics, University of Wisconsin-Milwaukee, USA
Bou Dergham, Nadine, Doctorate, 2020, Computer Science, Université Bourgogne Franche-Comté, France
Chaanine, Johnny, Ph.D., 2021, Business Administration-MIS, University of Nicosia, Cyprus, and DBA, 2015, Management, Grenoble Ecole de Management, France
Choufani, Joanna, 2014, Doctorate, Systematics and Evolution, Museum National d'Histoire Naturelle, France
Eid, Marguerite, Ph.D., 2020, Business and Management, University of Gloucestershire, UK
El-Gerges, Najwa, Doctorate, 2018, Therapeutic Education, Universite de Mulhouse Haute-Alsace, France
El Hage, Gabriel, Doctorate, 2011, Civil Engineering, INSA-Toulouse University, France
El Hage, Zaher, Doctorate, 2013, Science et Technique des Activités Physique et Sportives, Université du Littoral Cote D'Opale, France
El Zein, Ahmad, DBA., 2013, Marketing Tourism, Grenoble Ecole De Management, France
Fares, Cherine, Doctorate, 2022, Clinical Psychology, Université de Picardie Jules Verne, France and MD, 2012, USJ, Lebanon
Ghantous, Crystal, Ph.D., 2017, Biomedical Sciences-Physiology, American University of Beirut, Lebanon
Harb, Yara, Ph.D., 2021, Business Administration, Université du Saint-Esprit Kaslik, Lebanon
Hajj, Claudette, Doctorate, 2022, Civil Engineering, Universidad of Granada, Spain
Hilal, Nisreen, DBA, 2018, Grenoble Ecole de Management, France
Houssni, Joseph, Ph.D., 2014, Visual and Performing Arts: Cinema and TV, Holy Spirit University of Kaslik, Lebanon
Issa, Aline, Ph.D., 2022, Agricultural and Food Sciences, Université du Saint-Esprit Kaslik, Lebanon
Jibai, Bilal, Ph.D. 2018, Management, Bucharest Academy of Economic Studies, Romania
Kassis, Rosita, Doctorate, 2023, Business Marketing, Lebanese University, Lebanon
Khoury, Tarek, Ph.D., 2021, Design Innovation and Making (Miriad), Manchester Metropolitan University, UK
Klaimi, Rachid, Ph.D., 2022, Chemical Engineering, American University of Beirut, Lebanon
Kordab, Mirna, Ph.D, 2023, Business Management, Vilnius Gediminas Technical University, Lithuania
Kozaily, Diala, Ph.D., 2022, Business Administration, Université du Saint-Esprit Kaslik, Lebanon
Matta, Joelle, Doctorate, 2022, Business Administration, Lebanese University, Lebanon
Merhi, Samar, Doctorate, 2022, Epidemiology, Universite Paris-Est, France
Njaim, Maria, Ph.D. 2019, Politics and International Relations, University of Aberdeen, UK
Obeid, Charbel, Doctorate, 2021, Computer Science, Claude Bernard University, Lyon 1, France
Oueijan, Harvey, Doctor of Education, 2011, Saint Louis University, Missouri, USA
Rizk, Ribal, Doctorate, 2017, Economics, Lebanese University, Lebanon
Saab, Christine, Doctorate, 2018, Civil Engineering, University de Lille, France and Lebanese University, Lebanon
Saad, Ghadi, Doctorate, 2019, Management, Rennes School of Business, France
Samra, Kristine, Ph.D., 2021, Urbanism, Ulster University, Northern Ireland, UK
Sawan, Simona, Doctorate, 2021, Analytical Chemistry, Université Claude Bernard Lyon 1, France (from Lab. Instructors)
Sayyah, Rita, Doctorate, 2011, Information and Communication, Université Lumière Lyon 2, France
Shebaby, Rina, Doctorate, 2021, Art and Sciences of Art, Lebanese University, Lebanon
Skaf, Yahya, Ph.D., 2017, Business Administration, Lebanese University, Lebanon
Tannous, Joseph (Fr.), Doctor of Education, 2011, Saint Louis University, Missouri, USA
Trad, Mony, Ph.D., 2019, Management, Cracow University of Economics, Poland
Vanloan, Amira, Doctor of Education, 2013, Saint Louis University, Missouri, USA
Yazigy, Amal, Ph.D., 1992, Applied Linguistics, Leicester University, UK

Senior Lecturers

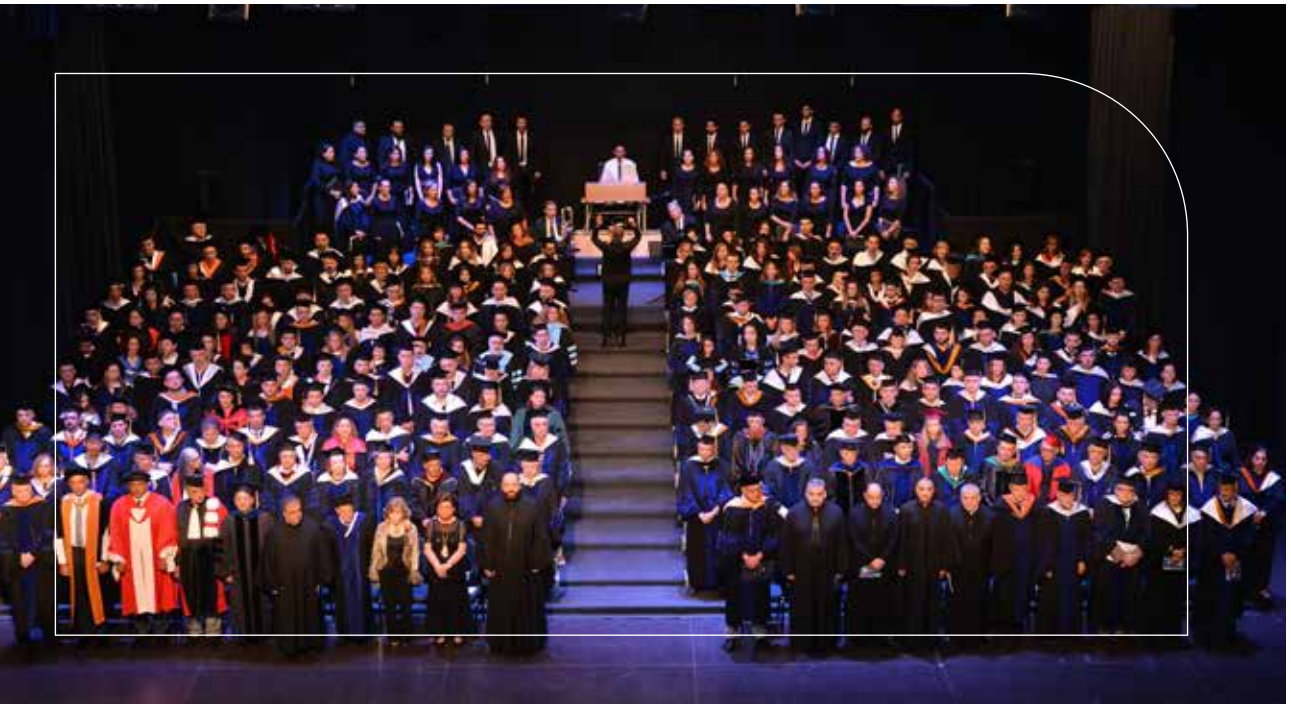
Abi Adam, Naoum, MFA, 2012, Cinematography, University St. Joseph, Lebanon
Abou Jaoude, Maya, MS, 1999, Food Technology, American University of Beirut, Lebanon

Akl, Salim, Diplome d'Etudes Supérieures en Architecture d'intérieur, 1990, Académie Libanaise des beaux Arts, Lebanon
Azouri, Pamela, MA, 2004, Political Science, Universita Degli Studi Roma Tre, Italy
Beyrouthy, Ghassan, MBA, 1999, Notre Dame University-Louaize, Lebanon
Bteich, Chadi, Master of Architecture, Landscape Urbanism, 2007, Notre Dame University-Louaize, Lebanon
Chamoun, Claudine, D.E.S., 1992, Interior Design, Lebanese University, Lebanon
Daher, Bassam, MS, 2004, Civil and Environmental Engineering, Massachusetts Inst. of Tech., and MBA, 2008, Boston University, USA
Donerian, Vatche, M.A., 1987, Theater and TV Directing, Yerevan State Institute of Dramatic and Fine Arts, Armenia
Hajj, Michael, MA, 1997, English Literature, Notre Dame University-Louaize, Lebanon
Hajjar-Muça, Theresa, MPH, 1994, Public Health, American University of Beirut, Lebanon
Hawi, Elie, Master in Urbanism, 2006, Urban Planning, Lebanese University, Lebanon
Jabbour, Layla, D.E.S.S., 2003, Restoration & Conservation of Monuments, Lebanese University, Lebanon
Karam, Mirna, MA, 2005, English Literature-Applied Linguistics, Notre Dame University-Louaize, Lebanon
Kopaly, Toni, Ph.D., 2007, Education, Université du Saint-Esprit Kaslik, Lebanon
Lahoud, Sam, MA, 2010, Media Studies: Journalism, Notre Dame University-Louaize, Lebanon
Lawoun, Dolcy, MA, 2016, Music, Notre Dame University-Louaize, Lebanon
Majdalani, Roula, Diplome D'Etudes Supérieures, 1985, Plastic Arts, ALBA, Lebanon
Maroun, Bachir, MS, 2001, Computer Science, Notre Dame University-Louaize, Lebanon
Obeid, Cecile, Master, 2011, Human Nutrition, St. Joseph University, Lebanon
Sakr, Omar, MSc, 2011, Responsible Tourism Management, Leeds Metropolitan University, UK
Samrani, Diana, MA, 1990, Education, Andrews University of Michigan, USA
Sawma, Victor, MS, 2003, Computer Science, University of Ottawa, Canada
Thomas, Alexander, M.S., 2016, Computer Animation, University of Portsmouth, UK

Lecturers
Akl, Charbel, MA, 2017, Design, Notre Dame University-Louaize, Lebanon
El Khoury, Simona, MA, 2018, Design, Notre Dame University-Louaize, Lebanon
El Khoury Badran, Miriam, MS, 2019, Computer Science, Notre Dame University-Louaize, Lebanon
Geha, Natalia, MA, 2008, Education, American University of Beirut, Lebanon
Haddad, Pierrot, MA, 2017, Media Studies-Electronic Media, Notre Dame University-Louaize, Lebanon
Ibrahim, Tamara, MFA, 2013, Interior Architecture and Design, University of Balamad (ALBA), Lebanon
Kallab, Alexandra, 2015, MA, International Cooperation: Sustainable Emergency Architecture, Universitat Internacional de Catalunya, Spain
Mikhail, Mia Maria, 2019, Master, Fashion Communication and Styling, Istituto Europeo di Design, Italy
Mourani, Natacha, 2015, Master of Business Administration (MBA), Notre Dame University-Louaize, Lebanon
Nakad, Aline, M.A., 2016, Urban Planning, and D.E.S., 2001, Architecture, Lebanese University, Lebanon
Rechdan, Melhem, MA 2008, Media Studies-Advertising, Notre Dame Univeristy-Louaize, Lebanon

Senior Laboratory Instructors
El-Hage Al-Amm, Rita, M.P.H., 1988, Public Health, American University of Beirut, Lebanon
El-Ghoussain-Maalouf, Nada, M.S., 1996, Microbiology, American University of Beirut, Lebanon
El-Turky, Nisrine, MS, 2014, Computer Information Systems, Notre Dame University-Louaize, Lebanon
El-Zoghbi, Catherine, D.E.A., 2003, Material Physics, Lebanese University, Lebanon
Moussa, Layale, Master 2, 2010, Industrial Analysis-Chemistry, Lebanese University, Lebanon
Siranossian, Aline, MS, 2013, Computer Information Systems, Notre Dame University-Louaize, Lebanon
Skaff, Nibelle, M.S., 2012, Physics, American University of Beirut, Lebanon
Zakhem, Walid, M.S., 1992, Electrical Engineering, Southern Illinois University, USA

Laboratory Instructors
Al-Achy, Samer, M.A., 2015, Media Studies-Electronic Media, Notre Dame University-Louaize, Lebanon
Bichara, Louise, ME, 2018, Civil Engineering, American University of Beirut, Lebanon
Haddad, Wissam, MBA, 2009, Accounting and Finance, Middle East University, Lebanon
Melki, Sylvie, Bachelor, 2009, Mechanical Engineering, Notre Dame University-Louaize, Lebanon
Sarkis, Rita, 2023, BA, Fashion Design, Notre Dame University-Louaize, Lebanon
Sleiman, Sawsan, M.S., 2023, Civil Engineering, Notre Dame University-Louaize, Lebanon
Whaibe, Nicolas, 2011, Master Research (M2R), Nanophysics, Lebanese University, Lebanon



ACADEMIC CALENDAR 2024-2025

FALL SEMESTER 2024

Aug. 9-26	F-M		First Payment Fall 2024
Aug. 26	M	9:00 a.m.- 3:00 p.m.	Orientation and Registration for New Students Fall 2024
Aug. 27-30	T-F	8:00-12:30/1:30-4:00	Confirmation Period for Continuing Students for Fall 2024. Registration and Confirmation Period for New Students and Returnees for Fall 2024
Sep. 2	M	7:30 a.m.	Classes Begin
Sep. 2-9	M-M		Application for Sibling Grant
Sep. 4-6	W-F	8:00-12:30/1:30-4:00	Drop and Add (Classes Are in session)
Sep. 6	F	8:00-12:30/1:30-4:00	Late Registration (Classes Are in session)
Sep. 9-10	M-T		Sports Recruitment days
Sep. 11-12	W-Th		Clubs' Recruitment Days
Sep. 15	S		Prophet's Birthday: Holiday
Sep. 19-20	Th-F		International Day of University Sport (IDUS)
Sep. 25	W		NGO Fair
Sep. 27-Oct. 7	F-M		Second Payment Fall 2024
Oct. 1-31	T-Th		Application for Work Study Grant-Current Students
Oct. 1-Dec. 5	T-Th		Financial Aid for New Students for Spring 2025
TBA			Opening Ceremony (Main Campus) for the Academic Year 2024-2025
TBA			Opening Ceremony (Shouf Campus) for the Academic Year 2024-2025
Oct. 7	M		Opening Ceremony (NLC) for the Academic Year 2024-2025
Oct. 17	Th		Student Union Election (Main Campus) - No Exams
Oct. 25	F	4:00 p.m.	Deadline for Spring and Summer 2024 Incomplete Grades
Oct. 25-Nov. 5	F-T		Third Payment Fall 2024
Nov. 1	F		All Saints' Day: Holiday
Nov. 11-15	M-F	8:00 a.m. - 4:00 p.m.	Registration Period for Continuing Students-Spring 2025
Nov. 22	F		Independence Day: Holiday
Nov. 27-Dec. 5	W-Th		Fourth Payment Fall 2024
Dec. 2-10	M-T		NDU Bridging Heart Campaign (Christmas 2024)
Dec. 6	F	4:00 p.m.	Deadline for Officially Withdrawing from a Course
Dec. 7	Sat		Entrance Examinations for Spring Semester 2025
Dec. 11	W	9:00 p.m.	Last Day of Classes
Dec. 12	Th		Reading Day
Dec. 13-21	F-Sat		Final Examinations Period
Dec. 19-Jan. 9	Th-Th		First Payment Spring 2025
TBA			Christmas Mass

Dec. 23	M	9:00 p.m.	Christmas Vacation Begins
Jan. 6	M		Epiphany and Armenian Christmas: Holiday
Jan. 6	M	9:00 p.m.	Christmas Vacation Ends
Jan. 7	T		University Reopens

SPRING SEMESTER 2025

Jan. 9	Th	9:00 a.m. - 3:00 p.m.	Orientation and Registration for New Students Spring 2025
Jan. 10-15	F-W	8:00-12:30/1:30-4:00	Confirmation Period for Continuing Students for Fall 2025. Registration and Confirmation Period for New Students and Returnees for Fall 2025
Jan. 17	F		Saint Anthony's Day: Holiday
Jan. 20	M	7:30 a.m.	Classes Begin
Jan. 20-27	M-M		Application for Sibling Grant
Jan. 22-24	W-F	8:00-12:30/1:30-4:00	Drop and Add (Classes Are in session)
Jan. 24	F	8:00-12:30/1:30-4:00	Late Registration (Classes Are in session)
Jan. 25	Sat		Entrance Examinations for Fall Semester 2025 - Early Admission
Feb. 9	S		St. Maroun's Day: Holiday
Feb. 10-Mar. 10	M-M		Application for Work Study Grant-Current Students
Feb. 10-June 30	M-M		Financial Aid for New Students for Fall Semester 2025
Feb. 25-Mar. 5	T-W		Second Payment Spring 2025
Mar. 8	Sat		Entrance Examinations for Fall Semester 2025 - Regular Admission I
Mar. 10-Apr. 15	M-T		NDU Bridging Heart Campaign (Easter 2025)
Mar. 12-21	W-F	8:00 a.m. - 4:00 p.m.	Registration Period for Summer and Fall 2025
Mar. 18	T	4:00 p.m.	Deadline for Fall Semester 2024 Incomplete Grades
Mar. 24-Apr. 4	M-F		Third Payment Spring 2025
Mar. 25	T		Feast of the Annunciation: Holiday
TBA			Easter Mass
* Mar. 31-Apr. 1	M-T		Al Fitr: Holiday
Apr. 11	F		Open Doors Main Campus (Classes are in Session-No Exams)
Apr. 16	W	9:00 p.m.	Western and Eastern Easter Vacation Begins
Apr. 21	M	9:00 p.m.	Western and Eastern Easter Vacation Ends
Apr. 22	T	7:30 a.m.	University Reopens
Apr. 24	Th		Open Doors Shouf Campus (Classes are in Session-No Exams)
Apr. 24-27	Th-S		NDU Annual School Games
Apr. 25-May 6	F-T		Fourth Payment Spring 2025

Apr. 29	T		Open Doors-NLC (Classes Are in Session-No Exams)
May 1	Th		Labor Day: Holiday
May 7	W	4:00 p.m.	Deadline for Officially Withdrawing from a Course
May 9	F		Founder's Day (Classes Are Not in Session)
May 12	M	9:00 p.m.	Last Day of Classes
May 13	T		Reading Day
May 14-22	W-Th		Final Examinations Period
May 16-26	F-M		First payment Summer 2025
May 23	F		Entrance Examinations for Fall Semester 2025 - Regular Admission II

SUMMER SEMESTER 2025

May 27	T	8:00-12:30/1:30-4:00	Confirmation Period for Continuing Students for Summer 2025. Registration and Confirmation Period for New Students and Returnees for Summer 2025
May 28	W	7:30 a.m.	Classes Begin
May 29-30	Th-F	8:00-12:30/1:30-4:00	Drop and Add (Classes Are in Session)
May 30	F	8:00-12:30/1:30-4:00	Late Registration (Classes Are in Session)
* June 7-8	Sat-S		Al-Adha: Holiday
TBA			Pinning Ceremony
June 13	F	6:30 p.m.	Commencement: Conferring of Degrees (Master Classes are not in Session if any)
June 25-July 4	W-F		Second Payment Summer 2025
* June 27	F		Hijra New Year: Holiday
* July 6	S		Ashoura: Holiday
July 7	M	2:30 p.m.	Deadline for Officially Withdrawing From a Course
July 10	Th	9:00 p.m.	Last Day of Classes
July 11	F		Reading Day
July 12-15	Sat-T		Final examinations Period
July 25	F		Entrance Examinations for Fall Semester 2025 - Regular Admission III
Aug. 15	F		Assumption Day: Holiday

*** Tentative dates**

UNIVERSITY PROFILE

UNIVERSITY PROFILE

IDENTITY, MISSION, VISION, AND VALUES

Identity

Notre Dame University-Louaize (NDU) is a private, Lebanese non-profit Catholic institution of higher education, which adopts the American system of education.

The religious affiliation of the University does not impose any sectarian obligations on faculty members, staff, or students. The cultural and spiritual heritage of the Maronite Order of the Blessed Virgin Mary (O.M.M.) highlights a belief in a unified Lebanon, a belief in education as a means of protection against fanaticism and corruption, and a dedication to the freedom of thought and expression. The University adopts such values and beliefs irrespective of creed, ethnicity, or gender and seeks to enhance these values through the liberal arts education it offers, and the career preparation that caters to the real-world needs of Lebanon.

Mission Statement

As a Catholic institution inspired by the cultural and spiritual heritage of the Maronite Order of the Blessed Virgin Mary (O.M.M.), Notre Dame University-Louaize (NDU) seeks to provide comprehensive quality education that fosters excellence in scholarship, lifelong learning, enlightened citizenship, human solidarity, moral integrity, and belief in God. In designing its curricula, NDU is committed to the philosophy and standards of the American model of liberal arts education. NDU promotes diversity, respect for human dignity and rights, and concern for the common good. Its profound aspiration is to prepare its students to be future leaders who can exercise reason and shape a world of truth, justice, love, and freedom.

Vision

NDU's vision is to:

- Become the venue of choice as Lebanon's leading Catholic university, offering students access to the finest faculties and a comprehensive curriculum taught in the Maronite tradition;
- Provide a highly personalized academic experience to graduate and undergraduate students;
- Integrate a strong, interdisciplinary, liberal arts core with programs that offer preparation for professional careers and graduate studies;
- Excel in selected highly specialized areas, including signature programs that enhance the University's reputation and serve as regional models for educational development in Lebanon and the region;
- Foresee the changing needs of the market and develop programs and utilize technologies consistent with those needs; and
- Create and sustain a community which reflects NDU's values in all aspects of University life.

Values

As a Catholic university offering higher education in the Maronite tradition, NDU is determined to practice those core values that respect humanity and the dignity of the individual. This helps students on their life path of learning, and allows them to discover their talents through cooperation while they look for truth, for individual empowerment, and for the enhancement of the world around them. Accordingly, our students dedicate themselves to the following core values:

- Faith - As a Catholic university, NDU highlights a strong belief in spiritual motivation and education as a vehicle for a better and more just society;
- Excellence - In all aspects of university life - teaching, scholarship, service, etc. - NDU strives to be a center of quality education;
- Scholarship - Seeking truth through informed and rigorous scholarship will place NDU among the top-ranking regional universities;
- Freedom - Of thought and expression: NDU commits itself to engage and enhance intellectual inquiry in the pursuit of truth by teaching students how to learn, how to think critically, how to conduct responsible research, and how to access and integrate information in preparation for career development and personal growth;
- Integrity - Teaching, scholarship, and student service within the University community are characterized by intellectual honesty and a sense of personal morality;
- Service - NDU is committed to serve not only its students, faculty, and employees, but also society at large;
- Diversity - Empathy, tolerance and respect for all people is essential to any university community. NDU encourages students to understand and appreciate the diversity of cultures, which exist locally, nationally, and internationally. It also seeks to promote diversity appreciation through an understanding of the impact human beings have on their environment; and
- Learning for Life - In the tradition of a Catholic liberal arts education, NDU commits itself to lifelong learning, encourages personal responsibility, develops spiritual values, and affirms a philosophy of life which actively supports global economic equity, social justice, and human rights.

HISTORICAL OVERVIEW AND HERITAGE

Heritage

The University's heritage and identity have their roots in the Lebanese Synod, held by NDU's sponsoring body, the Maronite Order of the Blessed Virgin Mary, that took place in the Monastery of Our Lady of Louaize in 1736.

The Synod encouraged the mission of education within the Christian Maronite ethos that believed in education for all, and began to establish schools in many parts of Lebanon to help achieve this mission.

In keeping with its Catholic spirit and Maronite tradition, and with its focus ever on the Synod's mission and directives, NDU as such has always sought to play its appropriate role in Lebanon and the entire Middle East.

As a Catholic university, NDU promotes the dynamic discussion of religious ideas. This dialogue strives to include the myriad voices of the Catholic tradition, past and present, as well as the voices of faculty, staff, and students of all backgrounds. Such an undertaking helps the University community understand and celebrate the differences among the various voices, identify what they have in common, and engage them in dialogue with the Catholic tradition.

NDU is inspired by the Christian message of the love of God and of one's neighbor. Its administrators, faculty, staff, and students dedicate themselves to the pursuit of academic excellence in an environment of respect, care, dialogue, and justice. NDU is a community which seeks to develop the love of truth and the desire to integrate and affirm the harmony between faith and reason. The University has reaffirmed the search for truth by offering curricula rooted in the arts and sciences guided by the University's spiritual and Catholic heritage. Students at NDU enjoy a transparent relationship of mutual respect with their professors. It is this unique environment that helps professors draw out their students' potentials while respecting their talents.

NDU seeks to endorse a Catholic presence through its student services, campus ministry, course curriculum, and administration, and continues to emphasize how this Catholic heritage brings meaning to its faculty, staff, students, and the entire NDU family.

Directors of LCHE

Patriarch Bechara Rahi	1978 - 1984
Abbot Antoine Sfeir	1984 - 1987

Presidents of NDU

Abbot Boutros Tarabay	1987 - 1993
Bishop Francois Eid	1993 - 1999
Abbot Boutros Tarabay	1999 - 2005
Father Walid Moussa	2005 - 2017
Father Pierre Najem	2017 - 2021
Father Bechara Khoury	2021 - present

Historical Overview

NDU was founded in 1987 by the Maronite Order of the Blessed Virgin Mary (O.M.M.). NDU started in 1978 as the Louaize College for Higher Education (LCHE) under the umbrella of Beirut University College (BUC). LCHE's first Director was the Patriarch Cardinal Mar Bechara Boutros Rahi from 1978 to 1984. Abbot Antoine Sfeir was appointed as Director of LCHE from 1984 to 1987.

In 1987, inspired by a deep apostolic concern and to address the needs of the community, the O.M.M. embarked on a new chapter in its history and founded an independent University. The legal journey of this project was the ratification by the President of the Lebanese Republic, who issued decree number 4116 on August 14, 1987, granting NDU the right to operate as an independent university. Today it is the only Maronite Catholic University in Lebanon that adopts the American model of education. Three years later, in June 1991, the University awarded its first bachelor degree to seventy-two graduates.

Along the direction set by the Vatican II Council, the O.M.M. decided to call on prominent members of the Lebanese society to oversee the operations of the University. Consequently, a Board of Trustees was established to supervise the academic and administrative operations and to help in the planning and development of the University.

In 1990, NDU established an off-campus program in North Lebanon, which relocated to a new campus located in Barsa, Koura in 1999, now known as the North Lebanon Campus (NLC). The campus lies on a 50,000 square meters donated by the Municipality of Barsa. The first building of the Barsa Campus was completed in June 1999 and additional buildings became operational in 2017 leading to a total build space of more than 26,000 square meters.

In April 1994, NDU established the Faculty of Engineering and Architecture. The Lebanese Government issued decree 9278 on October 5, 1996, granting the official recognition of the programs that lead to the Bachelor of Architecture and the Bachelor of Engineering in Civil Engineering, Computer Engineering, Electrical Engineering, and Mechanical Engineering. In Spring 2000, NDU established the Faculty of Architecture, Art and Design, later renamed to become the Ramez G. Chagoury Faculty of Architecture, Arts and Design, and the Faculty of Political Science, Public Administration and Diplomacy. Accordingly, the Faculty of Engineering and Architecture was renamed the Faculty of Engineering. Capitalizing on the need to serve the community, the Faculty of Nursing and Health Sciences was established in 2008. The name of the Faculty of Political Science, Public Administration and Diplomacy was updated in 2012 to become the Faculty of Law and Political Science by decree N.9555 preparing the launching of the Law program in 2013.

After establishing itself as one of the leading universities in Lebanon, NDU's administration saw a need to expand in the Shouf region and neighboring communities, and thus established a new campus in Deir El-Kamar within the Shouf district. The proposal was approved by the Board of Trustees in its meeting of March 8, 2001. The Shouf Campus was officially inaugurated on October 26, 2001.

NDU's current real estate holdings amount to 175,000 square meters and will grow according to the Master Plan to include new facilities in the future. True to its commitment of carrying out its historic mission, NDU's community celebrated the University's 25th Anniversary in 2012. This anniversary provided a unique opportunity for NDU to reflect on its past and to look forward to the road ahead. NDU is actively engaged in acquiring the highest accreditation at all levels, institution, faculty, department, and program. This effort ensures the constant improvement of NDU and its programs, and provides students with the credentials to continue their education or seek employment at the best institutions.

In 2018, NDU received official institutional accreditation by the New England Commission of Higher Education (NECHE), previously the Commission on Institutions of Higher Education (CIHE) of the New England Association of Schools and Colleges, Inc. (NEASC). NDU is the only Catholic institution in the Middle East and only the second university in Lebanon to have received this prestigious accreditation. At program levels, the Advertising and Marketing program was granted the formal accreditation from the International Advertising Association (IAA) in 1999. The Faculty of Engineering obtained the ABET accreditation for its BE programs

in 2016. The Faculty of Business Administration and Economics obtained its eligibility for the accreditation of the Association to Advance Collegiate Schools of Business (AACSB) in 2016. The program of Communication Arts – Radio/TV was declared eligible for accreditation by the International Association of Cinema and Television Schools in 2017. The program of Computer Sciences was accredited by ABET in 2018. The list is growing as more and more programs are considering programmatic accreditation while seeking excellence and attempting to fulfill the dreams of the founding fathers by offering top quality education at an affordable price.

LOCATION AND CLIMATE

Notre Dame University-Louaize's (NDU) main campus is located in Zouk Mosbeh, a coastal area 15 km north of Beirut, Lebanon. At 100m above sea level, the campus overlooks the beautiful sea shores, with an easy access to the economic and social life of a growing urban area. Theaters, shops, and coastal resorts all lie a short driving distance from the University. Further up the mountain, the Ouyoun Al Siman and Fakra winter touristic resorts are also easily accessible. Zouk Mosbeh remains mostly temperate throughout the year, with cooler temperatures from December to March, and warmer temperatures from June to September. The Fall and Spring seasons are usually sunny and cool. On average, NDU sees 300 days of sunlight per year, which allows for a variety of outdoor activities.

The NDU North Lebanon Campus (NLC) is located on the green hills of Barsa, a quiet village in Koura, at an altitude of 100m. The campus overlooks both the beautiful bay of El Mina - Tripoli, and the high mountains of Ehden and Bcharré, and is 10-15 minutes' drive from Tripoli, Zgharta, Chekka, and other villages in Koura. The clean, quiet environment, and the moderate climate add to the campus's charm. The campus lies on 50,000 square meters of land donated by the village of Barsa.

The NDU Shouf Campus (SC) is housed within the premises of the historic St. Abda Monastery in Deir El-Kamar. The Monastery was recently restored according to the latest standards to maintain its traditional and aesthetic appeal, while ensuring that all its amenities are up to date. Today, rows of oak and pine trees surround the campus, and the grassy evergreen slopes are well preserved. Beyond the University campus, the surrounding area of Deir El-Kamar blends gracefully with the monastery premises. This historic city is located in the central area of the Shouf region. It is 35 km from Beirut and is just over 900m above sea level. The region enjoys a moderate climate except for the winter months, when the temperature may drop to 7°C or below.

CAMPUS MINISTRY

The Campus Ministry seeks to express the Teachings of the Catholic Church and the spiritual heritage of the Maronite Order of the Blessed Virgin Mary (O.M.M.) by nourishing faith development and good works at Notre Dame University-Louaize (NDU) and by encouraging the University community (faculty, staff, and students) to know Jesus Christ and to bear witness to His teachings in their daily life and work.

While respecting all other religious traditions and beliefs, the Campus Ministry engages in every aspect of University life through prayer, liturgy, and spiritual services, i.e. retreats, reconciliation, and counseling. Charity events are organized regularly to allow the entire community to express their faith, love, and care for the underprivileged.

The Campus Ministry guides and supports the University Pastoral Community, which also coordinates with University Pastoral Work groups in other Lebanese universities.

WASHINGTON, D.C., OFFICE

NDU established a satellite office in Washington, D.C., United States, to promote its distinctive educational values and goals in the States. The D.C. office is charged with advancing the NDU Mission, while supporting the various American Friends of NDU (AFNDU) chapters, and all NDU alumni residing in the US.

The D.C. Office is mandated to:

- Support and work with AFNDU to promote NDU through events and other activities;
- Establish exchange programs between Lebanese and American students;
- Forge and maintain cooperative relationships with American institutions of Higher Education;
- Help NDU recruit faculty members;
- Provide support and services to NDU alumni residing in the US; and
- Liaise with alumni, friends, and faculty members.

NDU ALUMNI ASSOCIATION

The NDU Alumni Association is an independent non-governmental organization, created in 1992 in collaboration with the University.

The Association began with a group of loyal graduates who wanted to stay connected to their alma mater and fellow alumni. The aim of the NDU Alumni Association is to reunite all alumni under a common goal based on the ethos of Commitment, Unity, and Prosperity for the benefit of both NDU and its alumni.

The NDU Alumni Association was reactivated in 2016, and in Fall 2022, the current Board of Directors was elected. Despite the severe circumstances that our country is passing through, the new Board plans on reaching all NDU alumni through different events and a mobile application. Through different activities, the Alumni Association funded two scholarships:

- The NDU Alumni Association Scholarship that supports undergraduate students
- The NDU Alumni Association Graduate Scholarship that supports recently graduating students pursue their graduate studies at NDU

The Association is closely coordinating with the Office of the President and the Office of Business Strategy & Advancement in an effort to maintain synergy and close collaboration with the University administration.

AMERICAN FRIENDS OF NDU (AFNDU)

Established in 2001, and re-activated in 2014, the American Friends of NDU (AFNDU) is a 501(c)(3) non-profit organization established to serve as a cultural link between Notre Dame University-Louaize and its stakeholders in the United States of America.
AFNDU was created to:

- Establish and maintain a cultural link with the United States of America;
- Initiate exchange programs with American universities;
- Build relationships with Lebanese-American communities;
- Seek cooperation of American public libraries and university press offices; and
- Provide financial assistance to the University development as well as student scholarships and Financial Aid funds.

FRIENDS OF NDU FOUNDATION - CANADA

Founded in 1998, the Friends of NDU Foundation - Canada acts to enhance cultural and educational links between Notre Dame University-Louaize and Canada. The Foundation focuses on outreach efforts, strengthening connections with NDU Alumni and Friends throughout Canada. It also serves as a liaison for local and national authorities to ensure the University's presence is firmly established and recognized and lends logistical support to the University in its interactions with Canadian stakeholders, be it individuals or institutions.

OFFICE OF PRESIDENT

OFFICE OF THE PRESIDENT

The Office of the President supervises the affairs of the University from an internal perspective including academic, financial, and administrative matters, as well as external aspects like advancement tasks, governmental and public affairs, and international relationships, among others. These functions are implemented through different arms represented by Vice-Presidents and special units reporting directly to the Office.

OFFICE OF HUMAN RESOURCES

The Office of Human Resources strives to identify and engage individuals who embody the values of the institution and are committed to contributing to its success. The primary goal of the Office is to offer essential support and resources for the success of all employees.

OFFICE OF INTERNAL AUDIT

The Office of Internal Audit serves as an independent and objective resource to examine and evaluate University activities and improve the effectiveness of risk management, control, and governance processes.

OFFICE OF THE LEGAL COUNSELOR

The Legal Counselor acts as advisor to the President on legal issues and ensures legal compliance of all affairs of the University.

SCHOOL OF MUSIC

Recognized as a leader among music schools in Lebanon, the School of Music at NDU pushes the boundaries of making and teaching music through high level musical training in classical, modern and Arabic music.

The School of Music strives to educate and train musicians of all ages, providing them with performance opportunities and high-caliber education, drawing on the talent and deep experience of a group of distinguished faculty members.

The school is dedicated to inculcating the highest standards of excellence and nurturing individual artistic sensibility and creative growth. Students have a supportive environment that maximizes the individual attention they receive from their teachers and allows them to explore and develop their unique artistic personalities.

OFFICE OF ADMINISTRATION

OFFICE OF ADMINISTRATION

The Office of Administration provides administrative support to the entire NDU community. By overseeing and appraising staff, campus services, and facilities, the Office endeavors to develop short- and long-term strategic plans to accommodate the ever-increasing demands of the University. In addition, the Office facilitates collaboration and cooperation among administrative units, ensuring that they all work towards a common goal.

OFFICE OF CAMPUS SERVICES

The Office of Campus Services ensures the development and delivery of high quality support services that support the University's mission and objectives.

This encompasses a wide range of services including, but not limited to, mailing, transportation, ID, classroom, and housekeeping.

OFFICE OF PHYSICAL PLANT

The Office of Physical Plant is responsible for planning, coordinating, and overseeing the University constructions and renovations projects, in addition to maintaining the University facilities and grounds.

This comprises maintenance, landscaping, cleaning, and construction and renovation.

OFFICE OF INFORMATION TECHNOLOGY

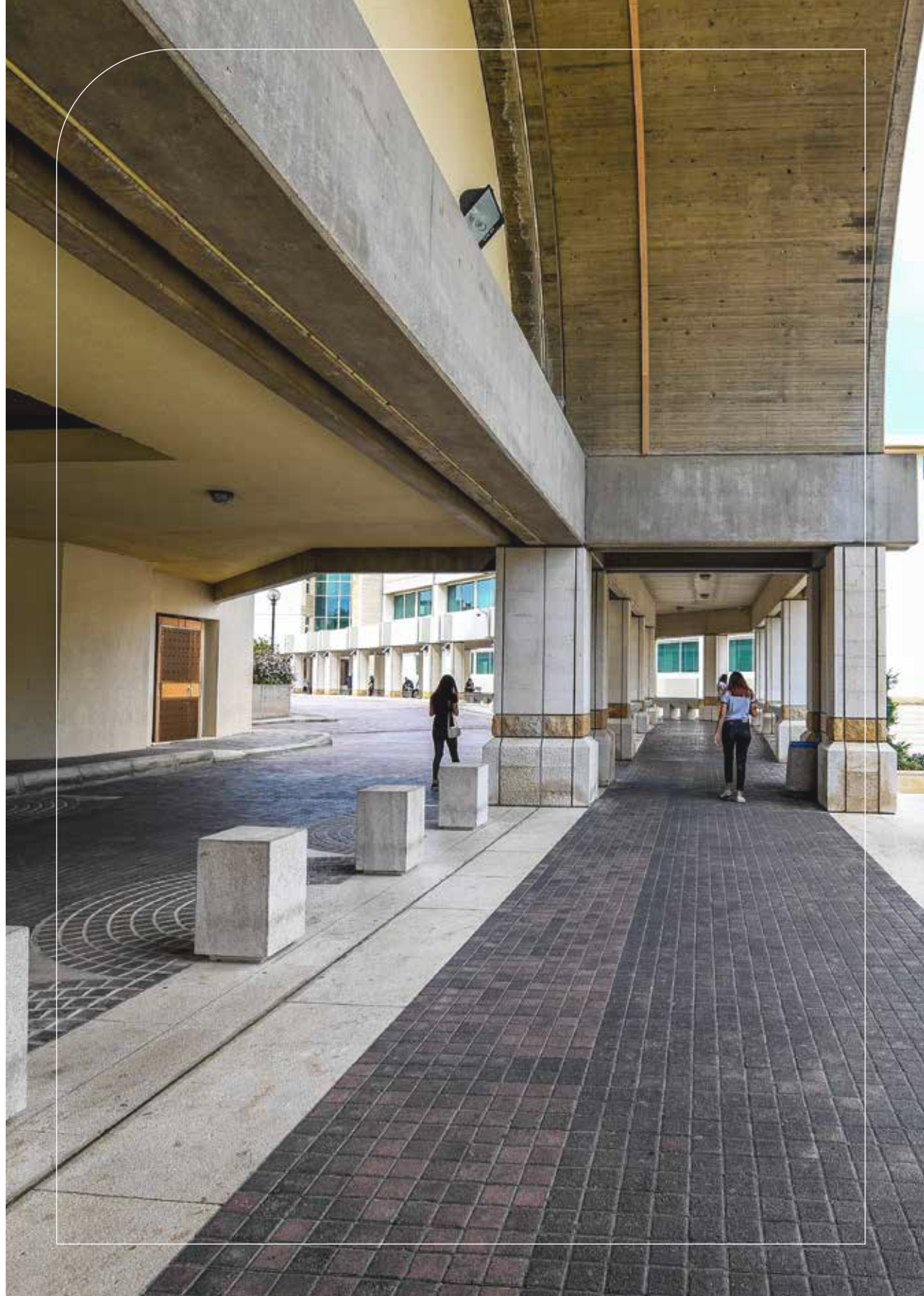
The Office of Information Technology (OIT) is committed to delivering cutting-edge technology services and innovative solutions to support the academic and administrative goals of the University. OIT houses four specialized departments that further enhance the technological ecosystem on campus.

The Applications and Software Development department focuses on creating and maintaining innovative software solutions tailored to the unique needs of our academic and administrative community.

The Infrastructure and Support department is responsible for maintaining and upgrading the hardware, servers, and systems that form the backbone of our digital ecosystem. This department also provides technical support, troubleshooting, and assistance to ensure a seamless experience for all faculty, staff, and students.

The Network and Security department is dedicated to safeguarding the integrity and confidentiality of our digital environment. They employ robust security measures to protect against cyber threats and unauthorized access. By continuously monitoring and analyzing our network, this department proactively identifies vulnerabilities and implements preventative measures to maintain a secure computing environment.

The E-Learning Center actively explores and implements new technologies, with a particular focus on enhancing the learning experiences through Blackboard, our virtual learning platform. Collaborating closely with faculty members, they actively contribute to the development of an interactive and engaging virtual learning environment.



OFFICE OF FINANCE

OFFICE OF FINANCE

The structure of the Office of Finance consists of a Vice President for Finance (VPF), a Director of Finance, Director of Procurement, an Executive Assistant, a Department of Budget and Financial Analysis, a Department of Business Office, and Office of Procurement.
The Office of Finance oversees financial management, budgeting, accounting, treasury operations, and procurement activities at the University.

DEPARTMENT OF BUSINESS OFFICE

The Business Office handles all University accounts in a professional and timely manner that allows the University to meet its statutory financial obligations and internal financial management objectives.

DEPARTMENT OF BUDGET AND FINANCIAL ANALYSIS

The Department of Budget and Financial Analysis at NDU handles all the University financial budgeting and planning in addition to allocate financial resources for better decision-making and goal accomplishment.

OFFICE OF PROCUREMENT

The Office of Procurement executes the procurement requests for the NDU Community in line with the approved Procurement Policy. Those requests cover purchasing of goods and services within the framework and procedures set by the university, as well as keeping good relationship with external stakeholders.

OFFICE OF UNIVERSITY ADVANCEMENT

OFFICE OF UNIVERSITY ADVANCEMENT

Established in 2017, the Office of University Advancement (OUA), previously known as the Office of Public Affairs and Communication, is charged, since its restructuring, with growing NDU's resources and consolidating its image and outreach efforts.

Advancement, as adopted by NDU, and as defined by the Council for Advancement and Support of Education (CASE), is "a strategic, integrated method of managing relationships to increase understanding and support among an educational institution's key constituents, including alumni and friends, government policy makers, the media, members of the community, and philanthropic entities of all types."

Over the past three decades, NDU has grown in faith, numbers, geography, and status, and the role of this Office is to preserve and uphold the University's mission in alignment with the University's vision, values, and best practices in outstanding higher education institutions. In addition, the Office works in close collaboration across the three University branches, i.e. Zouk Campus, North Lebanon Campus (NLC), and the Shouf Campus (SC), and coordinates closely with the NDU Alumni Association and all representative entities outside of Lebanon such as the American Friends of NDU and the Friends of NDU Foundation - Canada.

The Office looks after the image of the Institution and its positioning through an integrated approach across the whole University. The Office of University Advancement aims towards a higher non-financial valuation of the Institution, its quality of education and its level of enrollment, an expansion of its network, an increase in the number of partnerships with public and private sector entities, and an increase in funds from diverse entities.

The following sub-offices fall under the umbrella of and report to the Office of University Advancement:

- The Office of Public Affairs and Protocol;
- The Office of Communications;
- The Office of Marketing;
- The NDU Career Center; and
- The Office of Business Strategy and Advancement.

OFFICE OF PUBLIC AFFAIRS AND PROTOCOL

The Office of Public Affairs and Protocol focuses on establishing and enhancing strong and mutually beneficial relationships with external constituencies to the largest extent as well as exploring ways in which Notre Dame University-Louaize (NDU can positively Impact our society.

The office works closely with various entities, both national and foreign, to establish smooth and effective relations with the government, the community, and the public, with particular emphasis placed on all university-related formal and non-academic events.

The Office is also charged with organizing events on behalf of the President and acts in an advisory capacity to NDU entities and guests involved in planning their own events.

Moreover, the office is responsible for overseeing the communications with the media body, including preparing articles, press kits and press releases and other content material, scheduling interviews, providing media coverages and building a media planning strategy.

The additional main duties of this office are to:

1. Assist the Office of the President in organizing formal campus visits;
2. Assist the Office of the President in writing formal letters;
3. Set long-term plans for the full activation of the Office of Public Affairs and Protocol at NDU;
4. Establish a reliable connection with all governmental entities including but not limited to: the Advisors to the President of the Lebanese Republic, the National Parliament, the Council of Ministers, Embassies (Ambassador and Cultural Attaché), NGOs, various associations, international organizations, etc.;
6. Establish a regular timetable for visits to relevant parties;
7. Introduce the Office of Development and Alumni Affairs and the Office of Marketing (sponsorships) to relevant entities;
8. Maintain and update a database of all officials and VIPs, and share it with event organizers, when needed;
9. Extend personal invitations to VIPs to events and activities held on campus;
10. Coordinate with the Lebanese Emigration Research Center (LERC) in introducing the department mission and vision to all guests;
11. Manage the flow of news about the organization to the media;
12. Develop relationships with national and regional press contacts to ensure the university reputation is promoted and to deflect criticism; and
13. Ensure the university protects and promotes its image in a proper, coordinated, and consistent manner.

OFFICE OF COMMUNICATIONS

The Office of Communications (OC) builds, safeguards and develops NDU's image both offline and online in line with the University's mission, values, and vision. This is achieved by establishing an integrated communication strategy across all platforms, with the aim of increasing visibility for NDU, its students, faculties, programs and policies to a diverse stakeholder base.

The OC is organized into three main Departments: Public Relations, Creative Design, and Events Management.

Department of Public Relations

This Department comprises two units: Online Media and Editing.

i. **The Online Media** team works to preserve the University's digital image and promote all activities and announcements across the University's digital platforms, namely the official University website, social media, mobile application, and intranet.

ii. **The Editing** team develops news or content ideas; prepares, rewrites, edits, and proofreads all communication-related texts; and serves all University Offices and Faculties in an editorial capacity. The Editing Unit also contributes to digital and print NDU newsletters and publications.

Department of Creative Design

The Department of Creative Design is entrusted with designing materials and visual communications. It ensures an appropriate, creative, and unified visual identity for all University corporate internal campaigns in audio-visual, print (e.g., invitation cards, posters, brochures, books, magazines, etc.,) and digital (e.g., website, social media, corporate videos/campaigns, digital publications, etc.) media.

Department of Events Management

The Department of Events Management shoulders the responsibility of coordinating, and managing various event categories relevant to NDU along with external events that are hosted at the University premises. It also offers support including production and audio-visual details, hands-on support, and catering services.

OFFICE OF MARKETING

The Office of Marketing (OM) is dedicated to strategizing the appropriate approach to create awareness of the unfolding story of NDU, enhance positioning, and build support for the University among multiple constituencies (i.e. parents, students, alumni, public and private entities, international organizations, civil society, etc.).
The Office works to identify student needs vis-à-vis market demands and develop suitable solutions and tailored and effective programs and initiatives. The scope of this Office covers all campuses, all Faculties, all offices, and all incubated and external centers.

The Office of Marketing aims to:

i. Collaborate with other University offices to release an annual strategic plan that addresses all University institutional objectives;
ii. Support the internal community in the creation of programs and initiatives. It also reviews, elevates, and sets a plan for tactical activities/initiatives/campaigns initiated by other offices, while linking it to NDU Strategic Plan and its goals;
iii. Initiate market research to explore the perception of NDU (both internally and externally) and to support the Office of Communications in establishing and sustaining the University positioning strategy;
iv. Explore partnerships opportunities with external stakeholders, in close collaboration with the Office of Development and Alumni Relations and/or the Office of Public Affairs and Protocol; and
v. Initiate and implement Business Development projects with other offices, review and assess results, and communicate and report findings.

NDU CAREER CENTER

The Career Center helps individuals grow personally and contribute positively to society. We trust in everyone's ability to shape their own path and make a lasting impact.

The Career Center's mission is to provide students and alumni with the tools they need for meaningful careers. Through hands-on experience and networking, we aim to empower informed decision-making. We're dedicated to ensuring everyone has the chance to find fulfillment and success in their professional journey.

The NDU Career Center has developed an effective and collaborative array of career and internship services. Although located at the Office of Students Affairs, and administratively reporting to the Office of University Advancement, the Center's interventions impact every facet of university life, including new student recruitment, employer/community relations, research, and alumni affairs.

The NDU Career Center strives to provide the best career and employment services through widening its networking with more than 1800 various national, regional, multinational, and international companies to date. Moreover, it provides internship and recruitment opportunities shared on Symplicity platform, workshops related to job readiness such as soft skills, CV and cover letter writing, mock job interviews, design thinking, career development, job shadowing, boot camps, company tours, plant visits, one-on-one coaching, personality tests, amongst others. The highlight of the events organized by the Center are the Career Fairs in all three campuses, hiring campaigns, webinars, team building weekends, and joint events with other Career Centers in other universities.

The NDU Career Center provides USAID internships to senior students and fresh graduates with the possibility of recruitment.

In addition to all of the above, the Department signs Memoranda of Understanding (MoU) with leading companies in Lebanon and the region to provide students and alumni with golden internship and job opportunities, technical and transferrable trainings, interaction with experts, as well as sponsorship and adoption of senior projects.

The NDU Career Center has a Career Guidance office, a Career Lounge, and a Career Library with all resources made accessible to everyone.

For more information, kindly contact the Career Center on
09-208000 Ext. 2050, 2478, or 2463 or
via email: career@ndu.edu.lb, internship@ndu.edu.lb.

OFFICE OF BUSINESS STRATEGY & ADVANCEMENT

The Office is in charge of the strategic growth and development of the university. It identifies mission-related opportunities, builds strong relationships with internal and external stakeholders to encourage innovation and investment. Moreover, the office creates strong ties with NDU Alumni , and oversees a range of essential services that aim to build greater awareness of the university mission and support for its students .

The Office includes four Departments:

- The Department of Resource Development, Fundraising & Donor Engagement;
- The Department of Corporate & Partnership Relationships;
- The Department of Business Intelligence & Data Analyst; and
- The Department of Alumni Affairs.

The Office collaborates closely with the NDU Board of Trustees Advancement Committee, the NDU Alumni Association, the American Friends of NDU, the Friends of NDU Foundation - Canada, and other stakeholders.

The main mission of the Office of Business Strategy & Advancement (OBSA) is to create, nurture, and consolidate the ties with direct stakeholders by providing the needed platforms, initiatives, and opportunities of engagement within the University and beyond.

Department of Resource Development, Fundraising & Donor Engagement

The main mission of the Department is to raise funds for the support of financially challenged students and for the development of the University's resources. These funds are essential to continue supporting the well-being and education of students, with a focus on financial aid, scholarships and academic standards.
It initiates contact with prospective donors, locally and internationally, cultivates relationships with them, and works on solicitations.

The Department handles received gifts by processing them according to financial compliance standards and the University policies and procedures, and it generates the needed forms to track donations and allocate them to the relevant fund(s) in accordance with donors' will. The Department works on strengthening the relations with donors through stewardship tactics in order to secure their long-term commitment and provides them with the visibility for their contributions in collaboration with the Office of Communications.

Department of Alumni Affairs

The Department of Alumni Affairs serves as a focal point for all alumni networking through social and professional development activities and directs them to the relevant offices and faculties.
The Department creates and assists in the planning and implementation of alumni programs, initiatives, and activities, such as alumni engagement areas, class reunions, Alumni Day, campus tours, Alumni Spotlight e-newsletter, and more.
It works diligently to maintain a constant personal interaction and an online open channel of communication with all alumni in order to offer them timely and complete support while keeping them informed of University news and events.

The Department aims to:

- Serve alumni needs, as they are the permanent constituencies of NDU;
- Communicate their views, needs, and interests back to the University administration or other internal entities;
- Foster a lifelong relationship between alumni and the University;
- Maintain an information management system that creates channels of engagement to the benefit of the alumni and their alma mater; and
- Coordinate with the NDU Alumni Association on activities, programs, and events.

Department of Business Intelligence & Data Analytics

This Department plays a crucial role in supporting the University's strategic decision making and operational efficiency by gathering and integrating data from various sources (students, financial database, course registrations). It enhances student success plans and develops early intervention programs to improve retention rates. The aim is to extract insights about student demographics,

enhance academic performance, identify student enrollment trends, provide program development opportunities, suggest areas of improvement and different marketing efforts. The Department stays up to date on the latest trends and serves as a valuable resource for the University to achieve its educational mission.

Department of Corporate & Partnership Relationships

The units act as a catalyst for the University's growth and success. By securing resources, fostering collaboration, and building strong external relationships, they contribute to a vibrant academic environment and ensure students are well satisfied on campus.

The functions are:

- Identify potential partners and corporations aligned with the University mission and plans;
- Cultivate relationships by building strong connections with decision-makers;
- Create compelling proposals which highlight how the University's expertise can address the partner's need;
- Collaborate at large with faculty, staff and industry professionals for research projects and student opportunities;
- Increase visibility and create awareness to attract potential donors and research funding; and
- Engage industry professionals, be it alumni or business leaders.

OFFICE OF ACADEMIC AFFAIRS

OFFICE OF ACADEMIC AFFAIRS

The Office of Academic Affairs is the central unit managing and overseeing all academic affairs and related services at NDU. The entire institution works to fulfill its mission and the core of the mission is academic. The scope of work of the Office is multifaceted and includes coordinating the operation of the seven Faculties, overseeing the operation of all academic support units such as the University Libraries, the Office of the Registrar, the Office of Admissions, the Office of Student Affairs, and the Lifelong Learning Center, as well as academic services like the Office of Research and Graduate Studies, the Office of Academic Support, the Office of International Relations, the Office of Institutional Research and Assessment, and the Office of Grants. A major component of the role of the Office is to manage the institutional accreditation activities and to oversee programmatic accreditations. In this respect, NDU, as an institution, is accredited by the New England Commission of Higher Education (NECHE), and many of its programs are accredited by top bodies in their fields like AACSB, ABET, ACCA, CILECT, IAA, NAAB, etc.

OFFICE OF INSTITUTIONAL RESEARCH AND ASSESSMENT

The Office of Institutional Research and Assessment is responsible for institutional research. This type of research gathers accurate and timely information to support proper decision making and institutional effectiveness efforts, assessment, and analyses, which is a continuing process aimed at understanding and improving student learning.

OFFICE OF INTERNATIONAL RELATIONS

The world has developed into a global network of interaction, affecting cultures both locally and internationally. Educational systems are evolving to provide new international perspectives that foster the development of students, staff, faculty, programs, and institutions.

The mission of the Office of International Relations (OIR) at Notre Dame University-Louaize (NDU) is to develop and administer academic cooperation programs with universities, associations, and organizations around the world. We will achieve this mission through collaboration with the NDU community and adherence to NDU's identity, mission, and values.
The Office of International Relations aims to establish a culture that promotes and develops a peaceful, fair, cooperative, and sustainable environment.

The Office of International Relations:

- Serves as an archive for international educational agreements;
- Develops international educational agreements;
- Manages all international educational agreements;
- Assesses effectiveness of international educational agreements;
- Identifies and nurtures international educational agreements; and
- Advises and assists incoming and outgoing personnel.

A list of NDU's memberships in and agreements with regional and international organizations is shown below:

Academic Agreements with International Universities

- Abu Dhabi University, UAE
- Agrosup Dijon, France
- American University of Cyprus
- American University of Madaba
- Babes-Bolyai University, Romania
- Bauhaus-Universität Weimar
- Catholic University of Applied Sciences Mainz, Germany
- Catholic University in Erbil, Iraq
- Catholic University of Liberia
- Catholic University of Paris (ICP), France
- European Humanities University, Lithuania
- L'Institute Catholique d'Etudes Superieures (ICES), France
- Institut de Gestion Sociale Group for the American Business School (IGS-ABS Paris), France
- Institute for Housing and Urban Development Studies, Erasmus University Rotterdam, Netherlands
- IRCOM
- Karlsruhe Institute of Technology
- Milano Fashion Institute, Italy
- Madonna University, USA
- National Astronomical Observatory of Japan, National Institutes of Natural Science (NAOJ)
- Politecnico di Torino, Italy
- Universita e Nobil Collegio degli Orefici Gioielleri e Argentieri dell'Alma, Italy
- Universitas Airlangga, Indonesia
- Universität Salzburg, Austria
- Universität Ulm, Faculty of Engineering, Germany
- Université Catholique de Lille, The Faculties of Université Catolique de Lille, France
- Université-Paris Nanterre
- University College of Copenhagen, Denmark
- University of Applied Sciences Worms, Germany
- The University of Illinois
- University of Lisbon
- University of Minho, Portugal
- University of Naples, Federico II, Italy
- University of Ottawa, Canada
- University of St. Thomas, Houston, Texas
- The University of Siena
- University of Cyprus

Membership in Organizations

- Association of Catholic Colleges and Universities, USA (ACCU)
- Universities Association of Lebanon (UAOLB)
- College Board, USA
- Council for Higher Education Accreditation
- Fédération des Universités Catholiques d'Europe et du Liban, Belgium (FUCE)
- Fédération Internationale des Universités Catholiques (FIUC)
- International Association of Universities, France (IAU)
- United Nations Sustainable Development - UN Global Compact
- Educational Development Center, HECD Project with USAID
- Agence Universitaire de la Francophonie (AUF)
- Conseil National de la Recherche Scientifique (CNRS)
- American Association of Collegiate Registrar's and Admission Officers, USA (AACRAO)
- Smart Kids with individual Learning Differences (SKILD Center)
- Association of European Schools of Planning (AESOP)
- European Association for Architectural Education (EAAE)
- Association to Advance Collegiate Schools of Business (AACSB)
- Association of Chartered Certified Accountants (ACCA)
- BMW AG
- Ministry of Industry, Lebanon LIRA Program تجديد اتفاقية تعاون
- Lebanese Solar Energy Soceity
- Houmal Technology Park SAL, Houmal
- Growth Technology LLC a Nevada Limited Liability (GT)
- Institut de Recherche pour le Développement (IRD)
- Bioland
- IDEAL works GmbH
- Novelus Offshore SAL, Beirut
- SiliconCedars
- Meditterranean Network of Engineering and Management Schools (RMEIM Réseau Mediterranéen des Ecoles d'ingénieurs, France)
- International Advertising Association (IAA)
- CILECT The International Association of Film and TV Schools
- International Center for Human Sciences (CISH) UNESCO
- The Lebanese Center for Human Rights (CLDH)
- Sader Foundation
- Kloudr
- Chedid
- QOOT Lebanese Agri-Food Cluster
- United Nations Industrial Development Organization (UNIDO)
- ITG Holding (Company)
- Park Innovation (Tech Hub)
- Teach for Lebanon (NGO)
- Talent IVY (Company)
- CMA/CGM (to be finalized)

Additional Memberships

- Beirut Marathon Association
- Europe's World
- Friedrich Nauman Foundation (Fur Die Frieheit)
- Gibran National Committee
- Mr. Joseph Tawk
- Ministry of Culture
- SABIS/Admissions Online Application
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
- UN Habitat
- World Patriarchal Maronite Foundation for Integral Development
- Riders' Rights

- The Industrial Research Institute, Lebanon (IRI)
- Lebanese Agricultural Research Institute Association for LARI
- MENA Food Safety Associates s.a.r.l MEFOSA
- The Ministry of Industry
- The Ministry of Economy and Trade

For further information contact the Office of International Relations at oir@ndu.edu.lb

OFFICE OF GRANTS

The Office of Grants, established in 2018, is managed by a Director who reports to the Vice President for Academic Affairs (VPAA). The main function of the Office of Grants is to facilitate the acquisition of extramural funding for research and scholarship. The Office of Grants promotes research endeavors by identifying and informing NDU personnel of research-related activities and extramural sources of funding. The Office also facilitates grant submissions of NDU personnel through individual assistance and by offering group workshops. In addition, the Office of Grants identifies mechanisms and assists in acquiring institutional and programmatic funds from public and private sources.

OFFICE OF RESEARCH AND GRADUATE STUDIES

The Office of Research and Graduate Studies was created at the beginning of the 2013-2014 Academic Year. It is managed by the Assistant Vice President for Research and Graduate Studies (AVPRGS), who is responsible for developing and managing the research environment and activities, enhancing the production of quality research by faculty and graduate students, as well as involving undergraduate students into the research experience at Notre Dame University-Louaize NDU.

The AVPRGS reports to the VPAA.

The responsibilities of the AVPRGS include the supervision of the Research Centers. Supervision entails ensuring that the research centers carry out research activities in the fields of their specialties for the benefit of the society they are expected to serve, and for the advancement of their fields of research. The AVPRGS responsibilities also comprise the management of research funds, including their proper allocation, the processing of applications for travel requests, course release, and any other research-related requests. In addition, the AVPRGS acts as the administrator in charge of liaising, on behalf of the University, with national and international research organizations, and initiating joint research ventures with these organizations. Furthermore, the AVPRGS is a permanent member of the University Research Committee (URC) and the University Graduate Committee (UGC) within which the AVPRGS ensures that all research work and graduate programs are in line with the University mission, vision, and core values.

OFFICE OF ACADEMIC SUPPORT

The Assistant Vice President for Academic Support (AVPAS) is the University officer who assists the Vice President for Academic Affairs (VPAA) and is responsible for coordinating the work of the following academic support offices and units: Registrar, Admissions, Students Affairs, and NDU Libraries. The AVPAS reports directly to the VPAA.

NDU LIBRARIES

NDU LIBRARIES

NDU LIBRARIES MISSION STATEMENT

The NDU Libraries strive to provide quality services by acquiring, organizing, preserving, and providing access to a variety of information resources. The Libraries, thereby, support the University mission to foster excellence in scholarship and lifelong learning, and to educate students to be future leaders who can exercise reason based upon knowledge.

Description

The NDU Libraries consist of the Mariam and Youssef Library at the Zouk Mosbeh Campus, the NLC Library at the Barsa Campus, and the Shouf Library at the Deir El-Kamar Campus. The NDU Libraries are also responsible for developing and maintaining research collections in support of the Benedict XVI Endowed Chair, the Center for Applied Research in Education (CARE), the Institute for Lebanese Thought (ILT), the Lebanese Emigration Research Center (LERC), Marian Studies (MSC), and the Ramez G. Chagoury Faculty of Architecture, Arts and Design (FAAD) Room for Inspiration/Information/Ideas.

Recognizing that the library is central to fulfilling the University mission, the NDU Libraries keep up to date with the latest publications relevant to the major programs of study through purchases, subscriptions, and an active local and international gifts and exchange program. The NDU Libraries welcome and encourage donations and institutional exchanges that support the University's academic programs and the scholarly, teaching, and research interests of the NDU community.

The NDU Libraries are open to all users; however, only NDU faculty, staff, students, and alumni are currently granted borrowing privileges. NDU Libraries guests and visitors are allowed to access and use library resources within the confines of the library only. Furthermore, NDU Libraries materials may be requested and borrowed from any campus library, regardless of where they are housed.

As a founding member of the Lebanese Academic Library Consortium (LALC) and the Lebanese Inter-library Loan and Document Delivery Services Consortium (LIDS), the NDU Libraries actively collaborate with other Lebanese Libraries for the benefit of all. In addition, as a member of the global library cooperative, OCLC, the NDU Libraries are an active participant in OCLC's WorldShare Interlibrary Loan program, which facilitates resource sharing with more than 10,000 libraries in more than 100 countries worldwide.

The NDU Libraries provide access to a continuously expanding collection of core reference and circulating materials in print, manuscript, electronic, audio, visual, cartographic, and other appropriate formats. All campus libraries also provide facilities for individual and group study, along with appropriate research and instruction support, and access to information and technology resources.

All NDU Libraries' collections are searchable from the library homepage, which is accessible from the quick links section of the NDU website (http://www.ndu.edu.lb).

OFFICE OF NDU PUBLICATIONS

An integral non-profit unit of Notre Dame University-Louaize (NDU), the Office of NDU Publications pursues its mission by publishing/disseminating information to the scholarly and higher education communities, thus fostering the exchange of ideas and expertise with other similar communities, both inside and outside Lebanon.

The Office is mandated to:

- Edit, translate, and publish academic and non-academic publications;
- Explore ways of promoting NDU publications through various channels;
- Establish and maintain distribution points for NDU Publications (Lebanon and overseas);
- Set an approach to launch new books and re-introduce old collections to the right customers;
- Keep and update an inventory of printed publications and its rights; and
- File all related contracts.

The Office of NDU Publications has taken three major steps to revive book-publishing activities on a professional level:

1. All published books, as of October 2000, carry an ISBN number, which ensures recognition for NDU Press in Lebanon, Europe, and the USA as a professional University publishing house.
2. All books are reviewed with a recommendation to the NDU President before a final decision for publication is made. Specialized scholars are consulted to support such recommendations and decisions.
3. An agreement has been concluded with a distribution agency to ensure that books published by NDU Press are distributed to major bookshops in Lebanon and abroad.

OFFICE OF ADMISSIONS

OFFICE OF ADMISSIONS

Statement of Purpose

Notre Dame University-Louaize (NDU) is a Lebanese non-profit, private, Catholic institution of Higher Education modeled on the American liberal arts system of higher education. Guided by the cultural and spiritual heritage of the Maronite Order of the Blessed Virgin Mary, founded in 1695 and a pioneer in education, NDU emphasizes promoting human dignity. The religious affiliation of the University does not entail any sectarian obligation: applicants are granted equal opportunity irrespective of nationality, ethnicity, gender, disability, or religious affiliation. By promoting its academic and administrative facets and by recruiting students from local, regional, and international provenance, the Office of Admissions aims to enhance the universal image of NDU, an institution where all can explore the horizons of positive plurality within a rich human spectrum. Today, the seven Faculties at NDU continue to attract students from around the world and cater to the labor market demands of Lebanon and the region.

UNDERGRADUATE ADMISSION

Applications may be filled out and paid for online at
https://sis.ndu.edu.lb/iApply or in person at the Office of Admissions.

NDU Entrance Test fees are paid online at
https://sis.ndu.edu.lb/oar or in person at the Office of Admissions.

* English Entrance Test	USD 30
* Math Aptitude	USD 30

Note: Students who register for both exams at the same time pay USD 50 for both tests.
All fees are non-refundable.

The following documents must be submitted with each application form:

- Officially issued secondary school grades for the last three academic years;
- A photocopy of the National Identity Card (if Lebanese) or Passport (if foreign);
- One recent passport-size photo;
- A certified copy of the Lebanese Baccalaureate Part II or its equivalence; and
- Scores of standardized external tests (TOEFL, SAT, and IELTS) if available.

Applicants who do not submit scores of standardized tests must sit for the
NDU Entrance Exams (English Entrance Test and/or Math Aptitude Test).

Freshman applicants must additionally submit:

- An officially issued attestation stating that they have completed and passed all High School requirements or a copy of the High School Diploma signed by the school;
- A certified copy of the Freshman Authorization from the Lebanese Ministry of Education and Higher Education; and
- Scores of SAT (upon submission of the application).

All documents become the property of NDU regardless of admissions status.

Important admission dates and deadlines for the Academic Year 2024-2025:

Semester	Application Timeline
SPRING SEMESTER, 2025	October 1, 2024 - December 4, 2024
FALL SEMESTER, 2025	December 10, 2024 - July 22, 2025

Semester	Application Deadline (at noon)	Examination Dates	Decision Dates
SPRING SEMESTER, 2025	December 4, 2024	December 7, 2024	December 17, 2024
EARLY ADMISSION, Fall 2025	January 22, 2025	January 25, 2025	February 17, 2025
REGULAR ADMISSION I, Fall 2025	March 5 2025	March 8, 2025	March 28, 2025
REGULAR ADMISSION II, Fall 2025	May 20, 2025	May 23, 2025	June 16, 2025
REGULAR ADMISSION III, Fall 2025	July 22, 2025	July 25, 2025	August 21, 2025

Applicants may retrieve the Letter of Admission, along with the registration guidelines, online through https://sis.ndu.edu.lb/oar using NDU ID and Candidate numbers communicated to them by the Office of Admissions upon submitting their application.

FRESHMAN ADMISSION REQUIREMENTS

Students who secure written authorization to pursue their higher education based on a foreign program from the Equivalence Committee at the Lebanese Ministry of Education and Higher Education (MEHE) may apply to join the Freshman Class. They must hold a High School Diploma from a school recognized by the MEHE. Applicants to the Freshman Class are required to take the Scholastic Aptitude Test (SAT) before registration, as required by the MEHE, to secure the equivalence of the Lebanese Baccalaureate Part II.

Note: To receive the Lebanese Baccalaureate Part II equivalence, Freshman students must successfully complete at least 30 credits at the Freshman level and obtain the required minimum SAT scores of 870 for Freshman Arts and 950 for Freshman Sciences.
Students may not be considered for Sophomore standing before completing all Freshman requirements. Some majors may require specific freshman courses, and students are invited to check with their advisor to select the right freshman courses depending on their prospective major.

SOPHOMORE AND FIRST-YEAR ADMISSION REQUIREMENTS

To be eligible for the Sophomore or First-Year Class, applicants must hold the Lebanese Baccalaureate Part II or its equivalence, as determined by the Lebanese Ministry of Education and Higher Education.

Applicants must secure the composite score (CS) required by the Faculties to be admitted to their respective majors. This score is calculated by allocating 55% weight to the school averages of the first two secondary years and 45% to the NDU Math Aptitude Test or SAT Math.

TRANSFER ADMISSION REQUIREMENTS

A transfer student is one who, after starting education at one institution of higher education, seeks admission to another institution with the aim of earning an undergraduate degree. Students holding the Lebanese Baccalaureate Part II or its equivalence and completing 12 credits at the sophomore level at an institution recognized by the Lebanese Ministry of Education and Higher Education (MEHE) are eligible to transfer their credits matching courses at NDU provided they have good academic standing (GPA 2.0/4.0 and above) or its equivalent in other systems. Students from French/European system universities must successfully complete all the years up until the end of the current academic year. After submitting the application, transfer students must provide a recently issued official transcript. Courses graded "C" or higher are considered for transfer depending on Faculty/Department requirements. Transfer credits are not computed in the Cumulative GPA but marked as "Transfer."

Transfer applicants must fill out and pay for the Undergraduate Application form online, then submit official transcripts of records as well as courses' descriptions officially issued by the home university and/or copies of courses' syllabi to the Office of Admissions.

The deadline for all undergraduate transfer applications conforms to Regular Admission III session date.

NDU has in place a minimum residency requirement of at least 50% of the total number of credits required for the different majors offered at NDU. Faculties reserve the right to accept or reject the transfer of courses.

Students currently enrolled at NDU may transfer credits from another MEHE-recognized institution of higher education on condition to provide additional inputs within the first semester of enrollment.

ADMISSION REQUIREMENTS FOR SECOND DEGREE SEEKERS

Students holding a university degree from an educational institution recognized by MEHE may apply for a second degree. The Transfer Admission Requirements listed above, especially the residency requirements, will apply to Second Degree seekers.

ADMISSION REQUIREMENTS FOR SPECIAL STUDENTS

Students who are not working toward a degree are considered Special Students. Applicants must fill out and pay for the Undergraduate Application form online, then submit all required documents to the Office of Admissions. To be admitted, applicants must be undergraduate university-level students or pursuing undergraduate studies at another institution of higher education. Special status is granted on a semester basis. Thereafter, students who fulfill all admission requirements, including passing the required entrance exam(s) when applicable, may petition for "Regular Student Status."

ADMISSION REQUIREMENTS FOR AUDITORS

Students applying as Auditors attend lectures but are not required to submit any coursework or sit for exams. As such, they do not earn credits for courses completed but are entitled to a statement of enrollment upon request. Auditors must fill out and pay for the Undergraduate Application form online, then submit all required documents to the Office of Admissions. Applicants must be undergraduate university-level students. If not, their files are considered on an individual basis.

ADMISSION REQUIREMENTS FOR TEACHING DIPLOMA

Applicants holding a bachelor's degree can apply for the Teaching Diploma in the same area of specialization or as mandated by the Lebanese Ministry of Education and Higher Education. All applicants must fill out and pay for the Undergraduate Application form online, then submit all required documents to the Office of Admissions.

ADMISSION REQUIREMENTS FOR UNIVERSITY EMPLOYEES

NDU employees who request admission to an undergraduate program of study must meet the admission requirements of the respective Faculty. Employees are considered regular applicants and must abide by University policies and procedures.

ADMISSION REQUIREMENTS FOR FRENCH, INTERNATIONAL, AND LEBANESE BACCALAUREATE STUDENTS

All applicants must meet the Math proficiency and Composite Score requirements of the Faculty to be admitted to its respective majors. Accordingly, remedial courses may be given upon admission.

	Faculty Requirements for Fall 24		
Faculty	**French Baccalaureate Requirements in S3**	**International Baccalaureate Requirements in G12**	**Lebanese Baccalaureate Required Strands**
Ramez G. Chagoury, Faculty of Architecture, Arts and Design	No specific requirements.		
	Students applying to the Bachelor of Architecture are given one Math remedial course MAT103 and one Physics remedial course PHS101 upon admission depending on the Composite Score.		
Faculty of Business Administration and Economics	No specific requirements.		
	One Math remedial course MAT105 is given upon admission depending on the Composite Score.		

Faculty of Engineering	Students must show a record of at least one Math course and one Science course from the below list: • Physique-Chimie (6h) • Sciences de la vie et de la terre (6h) • Numérique et sciences informatiques (6h) • Sciences de l'ingénieur (6h)	Math at High Level (HL), Physics and another Science at Standard Level (SL) are required. Except for Chemical Engineering, only Math at High Level (HL) and Chemistry at Standard Level (SL) are required.	Life Sciences and General Sciences
	One Math remedial course MAT112 is given upon admission depending on the Composite Score.	One Math remedial course MAT112 is given upon admission depending on the Composite Score.	
Faculty of Humanities	No specific requirements.		
Faculty of Law and Political Science	No specific requirements.		
	To be eligible to join the Bachelor of Law program (to become lawyers, barristers, notary publics, civil servants), students must hold the Lebanese Baccalaureate or its equivalence (French and International Baccalaureate) as well as the Lebanese nationality.		
Faculty of Natural and Applied Sciences	Students must show a record of at least one Math course and one Science course from the below list: • Physique-Chimie (6h) • Sciences de la vie et de la terre (6h) • Numérique et sciences informatiques (6h) • Sciences de l'ingénieur (6h)	Math at High Level (HL) and one Science (Physics, Biology, Chemistry) at Standard Level (SL). Students applying to BS-Computer Science: Math at High Level (HL) and at least two science courses (Physics, Biology or Chemistry) at Standard Level (SL).	Life Sciences, General Sciences, and Sociology and Economics for: Physics, Computer Science, Mathematics, Computer Graphics and Animation, Information Technology, Chemistry, Biochemistry and Actuarial Sciences
	One Math remedial course MAT112 is given upon admission depending on the Composite Score. Students applying to BS-Computer Science, might also be given one additional remedial course Physics PHS101 or Chemistry CHM101.	One Math remedial course MAT112 is given upon admission depending on the Composite Score. Students applying to BS-Computer Science, might also be given one additional remedial course Physics PHS101 or Chemistry CHM101.	
Faculty of Nursing and Health Sciences	No specific requirements.		
	One Math remedial course MAT101 is given upon admission depending on the Composite Score.		
	For BS-Food Safety and Quality Management, one Math is required*.		No specific requirements.
	*If the Math course requirement is not met, one Math course is given upon admission.		

Faculty of Natural and Applied Sciences Requirements Starting Spring 25

For French Baccalaureate Holders:

Required in S3 / Major	Math	Physique-Chimie	Science de la Vie et de La Terre	Physique-Chimie or Science de La Vie et de La Terre
Physics	✓	✓ (Otherwise, PHS 101 is given)		
Computer Science	✓	✓*		
Math, CGA, IT, Chemistry, Actuarial Sciences	✓			✓ (Otherwise, PHS 101or BIO 101 or CHM 101 is given)
Biology, Biochemistry, Environmental Science				✓ (Otherwise, BIO 101 or CHM 101 is given)
Management Information system	No specific requirements			

✓: Required.
✓*: "Physique-Chimie" and "Science de La Vie et de la Terre" are required. If "Physique-Chimie" and "Science de La Vie et de la Terre" are not taken, PHS 101 and CHM 101 are given upon admission. If "Physique-Chimie" or "Science de La Vie et de la Terre" is taken, PHS 101 or CHM 101 or BIO 101 is given upon admission.

For International Baccalaureate Holders:

Required in G12 / Major	Math at High Level (HL)	Math at High Level (HL) or Math at Standard Level (SL)	Any Science at Standard Level (SL)
Math, Actuarial Sciences	✓		✓ (Otherwise, PHS 101 or BIO 101 or CHM 101 is given)
Physics	✓		✓ (Physics at Standard level, otherwise PHS 101 is given)
Computer Science	✓		✓**
IT, CGA, Chemistry		✓	✓ (Otherwise, PHS 101 or BIO 101 or CHM 101 is given)
Biology, Biochemistry, Environmental Science			✓ (Otherwise, BIO 101 or CHM 101 is given)
Management Information system	No specific requirements		

✓: Required.
✓**: Two Science at Standard Level are required. If one Science at Standard Level is taken, CHM 101 or PHS 101 or BIO 101 is given. If no Science at Standard Level is taken, PHS 101 and CHM 101 are given.

For Lebanese Baccalaureate Holders:

BACC.II Strand / Major	General Sciences or Life Sciences	Sociology and Economy	Literature and Humanities
Physics	✓	✓ (MAT 112 and PHS 101 are given)	
Actuarial Sciences	✓	✓ (MAT 112 and PHS 101 or BIO 101 or CHM 101 are given)	
Mathematics	✓	✓ (MAT 112 is given)	
Computer Science	✓	✓ (MAT 112 and PHS 101 or CHM 101 are given)	
IT, CGA	✓	✓	
Chemistry	✓	✓ (MAT 112 and BIO 101 or CHM 101 are given)	
Biology, Biochemistry, Environmental Science	✓	✓	✓ BIO 101 or CHM 101 is given)
Management Information system	✓	✓	✓

✓ : Required.

Abbreviations:
BIO 101: Introduction to Biology
CHM 101: General Chemistry I
PHS 101: General Physics I
MAT 112: Calculus and Analytic Geometry II

ENGLISH PROFICIENCY REQUIREMENTS

All applicants must satisfy a minimum level of English proficiency to be admitted. NDU recognizes the following tests:

- The English Entrance Test (EET) administered by NDU;
- Test of English as Foreign Language (TOEFL);
- SAT Evidence-Based Reading and Writing; and
- International English Language Testing System (IELTS) Score.

A student must pass the EET with a minimum score of 60 to be admitted without remedial English courses.

Below are the required English courses along with their corresponding EET score ranges.

EET Score Ranges	Accepted	Corresponding English Courses
60 and above	Accepted	ENL 213 (Sophomore Level)
55 - 59	Accepted	ENL 110 (3 credits - Remedial)
50 - 54	Accepted	ENL 105[1] (3 credits - Remedial)
40 - 49	Accepted	ENL 002[2] (9 credits - Intensive)

A student must pass the TOEFL iBT with a minimum score of 91 to be admitted without remedial English courses.

Below are the required English courses along with their corresponding internet-based TOEFL score ranges.

TOEFL iBT Score Ranges	Accepted	Corresponding English Courses
91 and above	Accepted	ENL 213 (Sophomore Level)
79 - 90	Accepted	ENL 110 (3 credits - Remedial)
69 - 78	Accepted	ENL 105[1] (3 credits - Remedial)
54 - 68	Accepted	ENL 002[2] (9 credits - Intensive)

[1] Any student enrolled in ENL 105 who scores a "B" or above, will automatically pass to ENL 213.
[2] Any student enrolled in ENL 002 who scores a "B" or above, will automatically pass to ENL 110.

A student must pass the SAT Evidence-Based Reading and Writing section with a minimum score of 540 to be admitted without remedial English courses.

Below are the required English courses along with their corresponding SAT Evidence-Based Reading and Writing score ranges.

SAT Evidence-Based Reading and Writing Score Ranges	Accepted	Corresponding English Courses
540 and above	Accepted	ENL 213 (Sophomore Level)
490 – 530	Accepted	ENL 110 (3 credits - Remedial)
430 – 480	Accepted	ENL 105[1] (3 credits - Remedial)
400 – 420	Accepted	ENL 002[2] (9 credits - Intensive)

A student must pass the IELTS with a minimum score of 6.5 to be admitted without remedial English courses.

Below are the required English courses along with their corresponding IELTS score ranges.

IELTS Score Ranges	Accepted	Corresponding English Courses
6.5 and above	Accepted	ENL 213 (Sophomore Level)
6	Accepted	ENL 110 (3 credits - Remedial)
5.5	Accepted	ENL 105[1] (3 credits - Remedial)
5	Accepted	ENL 002[2] (9 credits - Intensive)

[1] Any student enrolled in ENL 105 who scores a "B" or above, will automatically pass to ENL 213.
[2] Any student enrolled in ENL 002 who scores a "B" or above, will automatically pass to ENL 110.

FACULTY ADMISSION REQUIREMENTS

GENERAL ADMISSION REQUIREMENTS

Applicants must hold the Lebanese Baccalaureate Part II, or its equivalence, as determined by the Lebanese Ministry of Education and Higher Education.

Student selection depends on the following assessment tools:

- TOEFL, SAT Evidence-Based Reading and Writing, IELTS, or EET;
- SAT Math or NDU Math Aptitude Test; and
- Grades of the last Three Years of Secondary School.

Applicants must meet the composite score (CS) requirements of the Faculty to be admitted to its respective majors. This score is calculated by allocating 55% weight to the school averages of the first two secondary years and 45% to the NDU Math Aptitude Test or SAT Math.

FACULTY OF NURSING AND HEALTH SCIENCES (FNHS)

Applicants to BS-Food Safety and Quality Management holding the Baccalaureate Part II in one of the strands of Social Sciences and Economics or Literature and Humanities or its equivalent as determined by the Lebanese Ministry of Education and Higher Education and those holding the International or French Baccalaureate who didn't take any Math course in G12/S3 are subject to one Mathematics remedial course upon admission, MAT 111, irrespective of the CS.

TRANSFER POLICIES

RAMEZ G. CHAGOURY FACULTY OF ARCHITECTURE, ARTS AND DESIGN (FAAD)

The Department of Architecture at the Faculty of Architecture, Arts, and Design at Notre Dame University accepts transfer students, if places are available, and subject to the eligibility conditions stipulated in this policy. Transfer credit evaluations follow the procedures and deadlines as detailed in this policy.

General Requirements

- The home university is a MEHE-recognized institution (local and international).
- Students have completed a minimum of 12 credits at the sophomore level or higher at their home university.
- Students have a minimum cumulative GPA of 2.3/4 or a minimum of 70/100 for French/European system universities.
- Students applying from French/European system universities must submit an attestation stating that they have successfully completed the academic year(s) spent at their home university **(افادة نجاح)**.
- An official letter affirming good academic and disciplinary standing may be requested from the home university from which the student is transferring.
- An official statement certifying the number of years spent at the home university may be requested from the transferring student.

Students from a recognized Department of Architecture:
In addition to the General Requirements above,

- The maximum number of credits that can be considered for transfer must not exceed 50% of the total number of credits required for the degree of Bachelor of Architecture at NDU.

Students from Interior Design:
In addition to the General Requirements above,

- A maximum of 20 credits of Major courses may be transferred from Interior Design as per MEHE decision and NDU rules and regulations, in addition to Liberal Arts Courses deemed "equivalent" to those required at NDU.
- Students must fulfill a minimum residency requirement of 125 credits.

Students from other majors: In addition to the General Requirements above,

- Students from other majors are considered for transfer on a case-by-case basis. Additional conditions may hence be required (Math courses, conditional acceptance, other remedial courses, etc.)
- A maximum of 20 credits of Major courses may be transferred, in addition to Liberal Arts Courses deemed "equivalent" to those required at NDU.
- Students must fulfill a minimum residency requirement of 125 credits.

Transfer students can receive credit for NDU courses listed under the Core Requirements, the Liberal Arts Curriculum (LAC), and Free Elective categories of the NDU contract sheet. Major courses will be considered for transfer on a case-by-case basis depending on course description, grades, and student's portfolio.

FACULTY OF ENGINEERING (FE)

Students holding the Lebanese Baccalaureate Part II in the Sociology and Economics strand or the Literature and Humanities strand cannot be accepted directly as new students in the FE. They can, however, transfer to any Engineering major after having completed the following requirements in other science majors at NDU: a minimum of 12 credits of Mathematics/Physics/Chemistry courses (minimum passing grade of "B") at the sophomore level or higher as governed by FE transfer rules in addition to all other University requirements for transfer between majors.

The Faculty of Engineering at Notre Dame University accepts transfer students, if places are available, and subject to the eligibility conditions stipulated in these guidelines. The transfer credit evaluation shall follow the procedures and deadlines as detailed below.

A. Transfer Students from ABET-Accredited Engineering Programs
Transfer students are eligible to be accepted to pursue their studies in one of the majors in the Faculty of Engineering if they fulfill all the conditions below:

a. They were enrolled in an ABET-accredited program.
b. They have completed a minimum of 12 credits at their institution with a cumulative GPA of 2.0/4.0 or higher. For students from French or European system universities, they need to have successfully completed a minimum of one academic year with an average of 60/100 or higher.
c. They are eligible to continue their studies at their home institution. Students who are subject to disciplinary actions will not be accepted as transfer students. Official letters or other documents affirming their good academic and disciplinary standing as indicated above may be requested from the institution from which the student is transferring.
d. Students should submit a statement certifying the number of years spent at their home institution.

Transfer students can receive credits for NDU courses provided they have passed similar courses with a grade of C or higher at their home institutions.

B. Transfer Students from Officially Recognized Faculties of Engineering
Transfer students are eligible to be accepted to pursue their studies in one of the majors in the Faculty of Engineering if they fulfill all the conditions below:

a. They were enrolled in a Faculty of Engineering at an officially recognized institution, i.e., institution approved by the Ministry of Education and Higher Education.
b. They have completed a minimum of 12 credits at their institution with a cumulative GPA of 2.7/4.0 or higher. For students from French or European system universities, they need to have successfully completed a minimum of one academic year with an average of 70/100 or higher.
c. Same restrictions apply as in A.c and A.d above.

Transfer students can receive credits for NDU courses provided they have passed similar courses with a grade of B (or 70/100 for students from French or European system universities) or higher at their home institutions. In order to ensure that the student has achieved the needed outcomes and Faculty of Engineering objectives specified by the concerned Department, the Faculty of Engineering reserves the right not to give transfer credits for courses listed under the Core Requirements, Major Requirements and Major Electives categories at NDU even if the student has taken similar courses at his/her home institution.

C. Transfer Students from Non-Engineering Majors at Officially Recognized Institutions

The Faculty of Engineering accepts transfer students from science/architecture majors at officially recognized universities, i.e., universities approved by the Ministry of Education and Higher Education, provided that:

a. They have completed a minimum of 12 credits of Mathematics/Physics/Chemistry courses at the sophomore level or higher with a total GPA of 3.0/4.0 minimum.

b. They have a cumulative GPA of 2.7/4.0 or higher. For students from French or European system universities they need to have successfully completed a minimum of one academic year with an average of 70/100 or higher.

c. Same restrictions apply as in A.c and A.d above.

Students from non-"science/architecture" majors are not accepted as transfer students. They can apply as new students; no transfer of credits can be given.

Transfer students can receive credits for NDU courses provided they have passed similar courses with a grade of B (or 70/100 for students from French or European system universities) or higher at their home institutions. The Faculty of Engineering reserves the right not to give transfer credits for courses listed under the Core Requirements category, even if the student has taken similar courses at his/her home institution. The courses listed under the Major Requirements and Major Electives categories cannot be considered unless they were taken in an ABET-accredited program.

Remedial Math Courses

In some selected majors, applicants may be required to take one remedial course in Mathematics (besides the English remedial course[s]; see above) if, upon evaluating the application, the student fails to accumulate the minimum composite score required by the Faculty for admission to its majors.

Below are the selected majors along with their corresponding remedial courses and the minimum passing grade for each.

Faculty	Majors	Possible Remedial Courses	Minimum Passing Grade for Remedial Courses
Ramez G. Chagoury, Faculty of Architecture, Arts and Design	Architecture	MAT 103	C-
		PHS 101	C-
Faculty of Business Administration and Economics	All majors	MAT 105	D
Faculty of Engineering	All majors	MAT 112	B
Faculty of Natural and Applied Sciences	Biology, Biochemistry, Environmental Science	MAT 101	D
		CHM 101 or BIO 101	D
	Information Technology and Computer Graphics and Animation	MAT 105	D
		CHM 101 or PHS 101 or BIO 101	D
	Mathematics, Actuarial Sciences	MAT 112	C-
		CHM 101 or PHS 101 or BIO 101	D
	Physics	MAT 112	C-
		PHS 101	C-
	Chemistry	MAT 112	D
		CHM 101 or PHS 101 or BIO 101	D
	Computer Science	MAT 112	D
		One or two courses from the pool: CHM 101 or PHS 101 or BIO 101	D
	Management Information Systems	MAT 101	D
Faculty of Nursing and Health Sciences	All majors	MAT 101	D
	Food Safety and Quality Management	MAT 111	D

GRADUATE ADMISSION

Statement of Purpose
Graduate Studies at NDU promote humanistic, ethical, and spiritual values to enhance intellectual inquiry and awareness of human integrity and solidarity. The graduate programs also seek to develop the mental, physical, and spiritual potential of the student body. NDU additionally seeks to foster these values through a liberal arts education and career preparation that caters to the labor market demands of Lebanon and the region.

Admission Procedures
To be eligible for admission to a graduate program, an applicant must hold a bachelor's degree, or its equivalence, from an institution of higher education recognized by MEHE and the Lebanese Baccalaureate Part II, or its equivalence.
Admission to graduate programs at NDU follows the same deadlines as those set for undergraduate applicants.

Applications for Graduate Admission need to be filled out and paid for online. The Graduate Application fee is USD 30. The required documents must be submitted to the Office of Admissions. Admission requirements for graduate studies are determined by the Departments and Faculties concerned.

Applicants may retrieve their Letter of Admission along with the registration guidelines through https://sis.ndu.edu.lb/oar by using their NDU ID and Candidate numbers communicated to them by the Office of Admissions upon submitting their application.

Required Documents

- A certified copy of a bachelor's degree from the issuing University, or its equivalence, certified by the Lebanese Ministry of Education and Higher Education (NDU graduates only need to submit a regular copy);
- An official transcript of undergraduate record;
- A certified copy of the Lebanese Baccalaureate Part II or its equivalence (NDU graduates only need to submit a regular copy);
- A photocopy of the National Identity Card (if Lebanese) or Passport (if foreign);
- One recent passport-size photo; and
- Two letters of recommendation (1 Academic and 1 Professional; excluding NDU graduates).

NDU graduates applying for graduate studies are not required to sit for the English Entrance Test (EET). All other applicants must sit for the NDU EET (unless they submit standardized test scores) and should abide by the same test dates set for undergraduate applicants as shown in the Admissions Guide and on the official NDU website.

MBA applicants must also provide the following documents:

- Official Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) score (excluding applicants holding doctoral degrees);
- Curriculum Vitae; and
- Employment certificate.

MS in Engineering applicants must additionally provide the following documents:

- Official GRE score; and
- Curriculum Vitae.

All documents become the property of NDU regardless of admissions status.

Other Requirements
Individual Faculties reserve the right to request additional documents for admission to graduate programs including recommendations from employer(s), interviews, and samples of the student's work (portfolio) or personal statements.

TYPES OF ADMISSION

Regular Admission
Applicants holding a bachelor's degree can apply for graduate studies in the same area of specialization or as mandated by the Lebanese Ministry of Education and Higher Education.
Regular Admission is granted to those applicants who have fulfilled all undergraduate admission requirements. The minimum required cumulative Grade Point Average (GPA) is 3.0/4.0.

Conditional Admission
Applicants whose cumulative GPA at the undergraduate level ranges between 2.7/4.0 and 2.99/4.0 may be considered for conditional admission; this is determined by the Faculties concerned. Applicants must maintain the level of academic excellence expected of all graduate applicants and meet the graduate admission requirements. These applicants may be accepted on probation and must satisfy conditions set by the respective Faculty to remove the probation and complete the degree requirements.

Transfer Applicants
Applicants wishing to transfer and complete their graduate studies at NDU must meet the graduate admission requirements of NDU. Their university must be recognized by the Lebanese Ministry of Education and Higher Education (MEHE) to be eligible to transfer their credits matching courses at NDU and provided they have good academic standing (GPA 3.0/4.0 and above) or its equivalent in other systems. They must fill out and pay for the Graduate Application form online, then submit the required documents to the Office of Admissions. A complete record of all courses completed with course descriptions must be submitted. The Faculties concerned shall evaluate and determine the transferability of academic credits in addition to the applicant's eligibility for graduate level study at NDU.

The deadline for all graduate transfer applications conforms to Regular Admission III session date.

A maximum of 9 credits, completed at another accredited institution of higher education recognized by the Lebanese Ministry of Education and Higher Education, may be considered for transfer at the discretion of the Faculty Evaluation Committee. The course content and quality must correspond to NDU course descriptions as required for the major of choice. The minimum score of each course must be "B" or its equivalent. Transfer credits are not computed in the Cumulative GPA but marked as "Transfer."

Special Applicants
Students who are not working toward a degree are considered Special Students.
To be admitted, applicants must be graduate university-level students or pursuing graduate studies at another institution of Higher Education. They must fill out and pay for the Graduate Application form online, then submit the required documents to the Office of Admissions. Special status is granted on a semester basis.

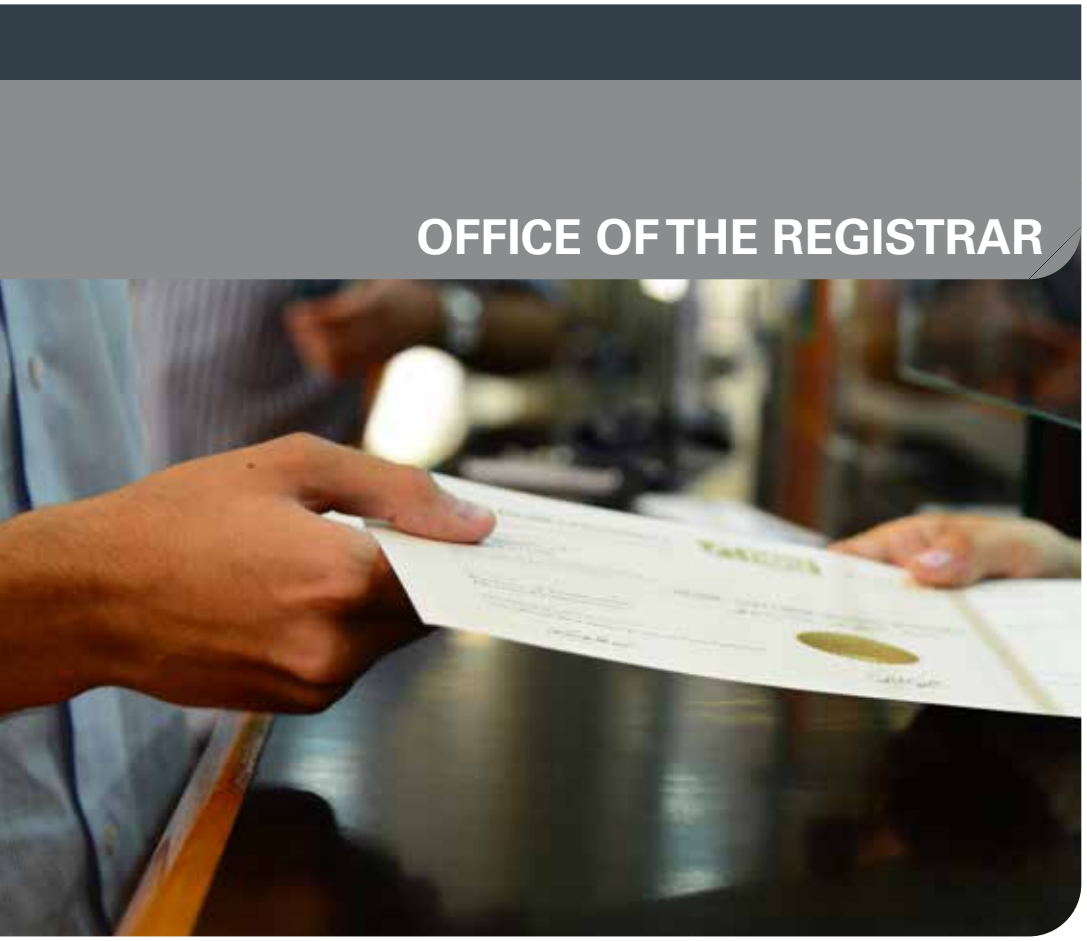
Auditors
Students applying as Auditors attend lectures but are not required to submit any coursework or sit for exams. As such, they do not earn credits for courses completed but are entitled to a statement of enrollment upon request. Auditors must fill out and pay for the Graduate Application form online, then submit all required documents to the Office of Admissions. Auditor status is granted on a semester basis.
Applicants must be graduate university-level students. If not, their files are considered on an individual basis.

University Employees
NDU employees who request admission to a graduate program of study must meet the admission requirements of the respective Faculty. Employees are considered regular applicants and must abide by University policies and procedures.

READMISSION

The *Letter of Admission* to NDU is valid for three consecutive semesters; otherwise, the student must reapply for admission.

OFFICE OF THE REGISTRAR



OFFICE OF THE REGISTRAR

The Office of the Registrar is charged with keeping academic records at Notre Dame University-Louaize (NDU). The Registrar, who is entrusted with the confidentiality and integrity of students' records, manages this Office. As the guardian of the academic rules and regulations, the Office of the Registrar provides students and academic units with all services related to those records.

ACADEMIC RULES AND REGULATIONS (UNDERGRADUATE)

STUDENT CLASSES

Students attending NDU who are not yet considered to be at the university level are classified as follows:

a.1.	**Remedial/Intensive**	0 credits
		Number of Credits Completed on courses at the 100 level and below the 200 level
a.2.	**Freshman Class**	1 - 30 credits
		Number of Credits Completed on courses at the 100 level and below the 200 level

Classification of Degree Students

Number of Credits Completed on courses of the 200 level or higher in addition to 30 credits given on admission for students who hold the Lebanese Baccalaureate II	
Sophomore (1st year)	30 - 59 credits
Junior (2nd year)	60 - 89 credits
Senior (3rd year)	90 - 119 credits
4th year	120 - 149 credits
5th year	150 credits and above

FULL-TIME STUDENTS

Full-time undergraduate degree students are those who register for at least 12 credits during the Fall or Spring semesters.

PART-TIME STUDENTS

Part-time undergraduate degree students are those who register for less than 12 credits during the Fall or Spring semesters. A part-time student does not qualify for financial assistance.

SPECIAL STUDENTS OR NON-DEGREE STUDENTS

Undergraduate students who are taking courses at NDU for credits but not working toward a degree are considered "Special Students" or "Non-Degree Students." Non-Degree Students shall be accepted on a semester-to-semester basis. Initial applications shall be made through the Office of Admissions and thereafter through the Office of the Registrar. Such students shall meet the academic standards required of degree students and shall be permitted neither to audit courses nor be qualified for any category of financial aid.

TRANSFER STUDENTS

Credits transferred from institutions of higher education that are recognized by the Lebanese Ministry of Education and Higher Education (MEHE) are accepted provided that the Department and Faculty concerned ensure that the credits accepted are applicable to the corresponding degree program. The accepted credit, however, does not count toward the student's GPA at NDU. The criteria established by NDU regarding this policy are made available to students through the University website and Catalog.

Depending on the Faculty, a transfer student is required to complete at least 50% of the degree requirements at NDU in order to be eligible for a degree, while the remainder of the credits that are taken at other institutions of higher education can be transferred if they satisfy the criteria of the Department and Faculty concerned.

For the Architecture and FE students, a maximum of 20 credits of major courses may be transferred as per MEHE decision and NDU rules and regulations. In addition to LAC deemed "equivalent" to those required at NDU.
Students must fulfill a minimum residency requirement of 125 credits.

UNDERGRADUATE FRESHMAN TRANSFER POLICY

Credits transferred from institutions of higher education that are recognized by the Lebanese Ministry of Education and Higher Education (MEHE) are accepted provided that the Department and Faculty concerned to ensure that these credits are applicable to the corresponding freshman program at NDU. The criteria established by NDU regarding this policy are made available to students through the University website and Catalog.

STUDENT EXCHANGE PROGRAM

An exchange program is a unique feature of international universities wherein a student may apply for a site transfer in any of the universities with which NDU shares an academic collaboration or exchange agreement. The student exchange program is a program coordinated by the Office of International Relations (OIR), a unit that reports to the Vice President for Academic Affairs (VPAA). The objective of the student exchange program is to promote international attentiveness and construct effective partnerships with established universities and educational institutions. A student exchange program will provide academic and intellectual benefit through the exchange of students between NDU and respective institutions that are party to a formal Exchange Agreement or a Memorandum of Understanding (MOU)/Cooperation.

- **OUTGOING EXCHANGE STUDENTS**

NDU exchange students will be considered "outgoing students." This does not mean, however, that they are no longer NDU students. No matter how long the exchange program may last, outgoing students will not receive a degree from the host institution; they must return to NDU to receive their degree. That being said, outgoing students must fulfill a set of requirements and complete an application to be eligible for the student exchange program.

- **INCOMING EXCHANGE STUDENTS**

Who can be an incoming exchange student?

- Students who wish to study part of their degree at NDU and take all credits achieved to their Home Institution; and
- Any student registered in a university that has a formal agreement with NDU which explicitly covers student exchange.

CREDIT TRANSFER FOR EXCHANGE STUDENTS

The Office of International Relations (OIR) at NDU will work with the student to negotiate a suitable program, with credits transferable to his or her Home Institution. The student will need to work hard on this part of the process at his or her Home Institution but should not expect to have it completely finished until he or she is back at NDU.
When the student finishes his or her study in the student exchange program at NDU, the student will be issued an official transcript of the courses completed and the grades achieved. It is, however, the student's responsibility to obtain his or her transcript. Therefore, follow-up on the attainment of the transcript of grades is the student's responsibility.

AUDITORS

An auditor is a student who has been admitted to the course(s) after having satisfied the requirements for admission to this course as deemed appropriate by the Department concerned. He or she is required to pay 75% of the course(s) fees. Once an auditor is registered, he or she cannot change his or her status back to credit. Grades and credits will not be given for auditing course(s) and hence cannot be counted for financial aid purposes. However, they are entitled to a statement of enrollment upon request.

HOURS OF CLASSES

Usually, classes are held Monday through Friday. Some classes, however, may be exceptionally held on Saturdays to make up for missed sessions or to schedule exams. During regular semesters, classes start at 8:00 a.m. and end at 9:00 p.m., with some 4-credit courses starting at 7:30 a.m. instead. During the Summer session, classes start at 8:00 a.m.

ATTENDANCE POLICY

The University expects regular attendance from its registered students. A course instructor should ensure that all students present in his or her class are indeed registered in the course. Two basic rules apply to all excused absences, whether the excuse is permitted by NDU policy or at a course instructor's discretion:

- Students must still meet all course requirements; and
- The course instructor must offer students reasonable assistance in making up missed work, only if the excused absence has been justified.

Scope of Policy

Full participation in classes, laboratory sessions, and examinations is expected of all students.

The course instructor should keep a record of attendance throughout the semester, detailing the attendance policy, including procedures for submitting approved excuses and scheduling makeup work, in their syllabus, distributed on the first day of classes.

A student may be asked to provide documentation, validated by the SAO, for multiple consecutive absences.

The student is responsible for the material presented during their absence. The maximum number of absences for classes that meet on MWF is 6 and for those that meet on TTH and in Summer is 4, (or 2 hours per credit course). Any student whose absences exceed the maximum limit shall automatically be unofficially withdrawn from the course unless he or she formally withdraws.

Range of Excused Absences

Students shall receive excused absences for a reasonable number of anticipated absences as well as for emergencies. Excuses for absences must be validated by the Office of Student Affairs (SAO), and cleared by the relevant course instructor.

University Closure

University closure due to unanticipated events may occur. Students may be required to complete missed coursework in the case of such class cancellation. A faculty member requiring a mandatory make-up session, however, may not penalize students if they are unable to attend due to time conflicts or other reasons.

Drop for Non-Attendance

Students are not automatically dropped from a course if the allowed number of absences is exceeded. They must themselves officially drop the course(s) by the set deadline in the academic calendar; otherwise, a "UW" grade will be issued.

EXAMINATIONS AND QUIZZES

All courses normally have written final examinations. Such examinations are not required in seminars, field work, internship programs, studio courses, and senior projects, but instructors may choose to give one.

Instructors must give a minimum of 2 quizzes and progress tests per course. If a student misses a quiz for a legitimate reason acceptable to the instructor, he or she should arrange for a make-up with the instructor within a maximum period of 2 weeks from the date of the quiz.

Final examinations shall count for a maximum of 40% of the final grade. Those exams should be comprehensive by nature. The remaining 60% account for quizzes, progress projects, tests, term papers, and other requirements, as specified by the respective Department. A minimum of 40% of the course evaluation should be known by students prior to the official withdrawal deadline.

Different sections of the same course must be given a common departmental final examination.

FINAL EXAMINATION MAKE-UP

If a student misses a final examination for a legitimate reason, he or she will receive an incomplete grade, designated "I". The student shall arrange for a make-up examination with the course instructor. Once a date is agreed upon, the student shall pay the University a make-up final examination fee. Consequently, the make-up final examination shall be taken no later than the 8th week of the following academic semester. In the case where a change of grade is not received by the Office of the Registrar within the set period, a grade of "F" shall be given for that course.

GRADED FINAL EXAMINATION PAPER

The graded final examination papers of a course offered during a given semester or the Summer session must be submitted to the Department Chairperson concerned within 72 hours from the scheduled date of the final examination of that course. These papers must be kept at the Department concerned for at least 1 semester along with a copy of the course syllabus, final examination, and its solution.

FINAL GRADES

A course's final grades should be submitted to the Office of the Registrar within three working days, or 72 hours, after the scheduled date of the examination for that course. The instructor should submit the final grades online to the Department Chairperson, who will in turn submit the grades to the Dean of the respective Faculty for final approval.

TRANSCRIPTS

Upon request, students can obtain an official transcript or a student copy transcript from the Office of the Registrar within 2 working days upon submitting a signed request form. Transcripts cannot be issued to students who have a financial account pending with the University.

CHANGE OF GRADE

Once a student's grade for a course is reported by the Faculty and submitted by the Dean, it shall be final in the absence of justified circumstances. Under justifiable circumstances, to change a grade, the course instructor is required to fill out and sign a "Change of Grade Form." All supporting documents should be attached to the form. Once the Department Chairperson approves the new grade, it is forwarded to the Faculty Dean for final action and then resubmitted to the Office of the Registrar for processing, all within five working days.

Only under force majeure would a student's case be considered beyond those five working days. In this event, the student may submit an e-petition for re-evaluation of his or her final grade in a particular course.

No case will be considered after a lapse of one semester.

CHANGE OF PROVISIONAL GRADE

Changes made to the provisional grades "I" and "PR" should be done within an allotted period; otherwise, the Office of the Registrar will directly convert the grade to "F." The "I" grade must be changed by the end of the 8th week of the following semester and the "PR" grade must be changed by the end of the following semester and/or within the specified deadline.

GRADES FOR REPEATED COURSES

Students must repeat courses for which they got a grade of "F," "UW," or those courses for which they did not get the required passing grade set by the relevant Department or Faculty, in the case where these courses are required in the major. Students must repeat these courses immediately the next time they are offered. For a repeated course, the highest grade will be computed into the GPA. The other grades are kept on the student's transcript. A course may be repeated only twice. The letter "R" will be placed on the student's transcript next to the course being repeated.

GRADES UPON CHANGE OF MAJOR

1. Upon approval of change of major, all grades on transferable or non-transferable courses taken by a student in his or her old major/area of concentration remain part of his or her official transcripts. Unlike the transferable grades, the non-transferable ones are not computed in the student's GPA for the new major and are not counted toward the total number of credits required for graduation for the new major. A student cannot ask for a non-transferable course to be computed back in his or her GPA.
2. The students who benefited from the above rule (#1) cannot return to their old major, and cannot request to have their major changed again to any major, which requires a non-transferable course grade and which was deleted from his or her GPA.

SYSTEM OF GRADES

The University uses the following system of grades. This system consists of letter grades with their corresponding numerical ranges (i.e., percentage equivalent and the 4.0 point maximum).

Grade	Description	Quality Point Value	Percentage Equivalent
A+	Outstanding	4.0	97 - 100
A	Excellent	4.0	93 - 96
A-	Very Good	3.7	89 - 92
B+	Good	3.3	85 - 88
B	Good	3.0	80 - 84
B-	Good	2.7	77 - 79
C+	Satisfactory	2.3	73 - 76
C	Satisfactory	2.0	70 - 72
C-	Passing	1.7	66 - 69
D+	Passing	1.3	63 - 65
D	Lowest Passing	1.0	60 - 62
F	Failure	0.0	0 - 59

UW Unofficial Withdrawal — The **"UW"** grade is assigned by the instructor when a registered student has never attended a class or has ceased attending and has not submitted an official course withdrawal request to the Office of the Registrar. This grade is computed as an **"F"** grade in the GPA.

W Official Withdrawal — The **"W"** grade indicates withdrawal without academic penalty. This grade is issued by the Office of the Registrar only to students submitting an official course withdrawal form by the scheduled deadline. The grade **"W"** is not computed in the student's GPA and may not be changed to any other grade under any circumstances.

PR Progress, Re-enroll — The **"PR"** grade is a provisional grade, and hence it is not computed in the student's GPA. It is used to reflect progress on continuing research efforts for the senior study, or the senior research, or design project or internship course until it is completed a grade of **"PR"** could remain on the student transcript two consecutive regular semesters, after which a different grade should be assigned. Otherwise, the **"PR"** grade will automatically turn into **"F"**.

U Audit — The **"U"** grade indicates that the individual was an auditor or listener in the course. This does not have any quality point value, credits nor a written statement can be given for a class audited, and no instructor is authorized to admit anyone as an auditor to any of his or her classes unless the individual has registered as such.

I Incomplete — The **"I"** grade is a provisional grade, and hence it is not computed in the student's GPA. It indicates that the student has for good and justified reasons not completed all course requirements, but there is a reasonable expectation that he/she will successfully complete it. If this provisional grade is unresolved by the end of the 8th week of the following semester, the Office of the Registrar will automatically convert it to the grade of **"F."** The grade will then be computed in the student's GPA. However, students who are out of attendance in the semester following the one in which the course was taken have one year to complete the work. Degree candidates should be aware that an **"I"** grade received during the last semester in any of the courses required for graduation will automatically result in the postponement of graduation.

P Pass — **"P"** indicates a passing performance in a course taken in a Pass/No Pass. The credits, if any will be added to the number of credits passed, but will not be included in the average. It has no quality points.

NP No Pass — **"NP"** indicates a failing performance in courses taken on a Pass/No Pass basis. No credits will be added to the student's record, nor will the average will be affected. It has no quality points.

GRADE POINT AVERAGE

The Grade point average (GPA) or index is the ratio of the total quality point values divided by the number of the credit hours attempted by the student, as shown below.

Course Number & Designation	Grade Earned	Credit Hours Attempted		Quality Point Values		Total Quality Point Values
ARB 211	B+	3	×	3.3	=	9.9
MGT 425	A	4	×	4	=	16
HUT 305	D	3	×	1	=	3
MAT 215	F	3	×	0	=	0
CSC 200	C-	1	×	1.7	=	1.7
		14				30.6

The GPA of the five courses would then be: $\frac{30.6}{14} \cong 2.19$

which is equivalent to a grade of **"C."** Students are expected to know how to compute their own GPA. Courses with a grade of **"W," "U," "PR,"** or **"I"** are not counted in computing the cumulative GPA. The same applies to all transfer courses. Hence, grades for work done at institutions other than NDU are not included in the GPA. Only courses and credits may be transferred. Thus, the cumulative GPA is an average of all the credit hours attempted by the student at NDU.

ACADEMIC STANDING

There are four kinds of academic standing for an undergraduate student at NDU:

1. Good Academic Standing

An undergraduate student is deemed in good academic standing if his or her cumulative GPA satisfies any of the following cases:

Cumulative GPA	# of Attended Undergraduate Credits
At least 1.5/4.0	1 cr. - 12 cr.
At least 1.75/4.0	13 cr. - 24 cr.
At least 2.0/4.0	25 cr. or more

2. Academic Probation

An undergraduate student will be placed on academic probation if his/ her cumulative GPA is less than the indicated threshold in the Good Academic Standing table shown above.

3. Academic Suspension

An undergraduate student placed on academic probation for three consecutive semesters will be placed on academic suspension, with the third probation acting as the suspension, irrespective of whether or not he or she is registered. The student will be granted one more semester for the removal of suspension.

If at the end of the semester the student still fails to remove the suspension, he or she may consider the following options:

1. The student may submit an e-petition to reconsider the suspension decision. The decision taken will determine the student's final status depending on the GPA obtained:
   - The suspension may be withheld if the cumulative GPA is between 1.80 and 1.99. The student is then given another semester to be in good academic standing.
   - If the cumulative GPA is 1.79 or lower, the student will be placed on academic suspension in their Faculty; however, they may register in another Faculty at NDU following the required procedure. The student may apply for reinstatement if, after spending a minimum of one semester in another Faculty, he or she obtains a cumulative GPA of at least 2.0/4.0, and a general average greater than 2.0/4.0 on at least 12 credits of courses relevant to the major (according to the Faculty requirements).

OR

2. The student may register, upon the written approval of their academic advisor and Department Chairperson, in a number of courses at other recognized institutions of higher education. If after spending a minimum of one semester at other institutions, a satisfactory general average of at least 2.0/4.0 on at least 12 credits of courses relevant to the major (according to the Faculty requirements) is achieved, the student may apply to be reinstated at his or her Faculty. The credits for the courses completed with a grade of "C" or above may be transferred towards the requirements of their degree at NDU. However, these grades will not be counted towards the GPA.

4. Academic Dismissal

An undergraduate student is dismissed from the Faculty if he or she fails to maintain a good academic standing either during the semester immediately following reinstatement from academic suspension or fails to maintain a regular status after having received permission from the Faculty Dean to have the suspension removed.

ACADEMIC RECOGNITION

There are two kinds of academic recognition:

1. Dean's Honor List:

Full-time students who obtain a semester GPA of 3.20/4.00 or higher with no incomplete grades during a given semester are placed on the Dean's List for that semester. These students are invited to attend the Dean's Luncheon held in their honor.

2. Graduation with Distinction:

An undergraduate student with high academic achievement will graduate with:

- Cum Laude (Distinction), if the cumulative GPA falls between 3.20/4.0 and 3.49/4.0;
- Magna Cum Laude (High Distinction), if the cumulative GPA falls between 3.50/4.0 and 3.79/4.0; and
- Summa Cum Laude (Highest Distinction), if the cumulative GPA is 3.80/4.0 or above.

Such distinctions appear on the student's transcript and degree. A transfer undergraduate student is only eligible for these distinctions if he or she has completed at least 50% of degree requirements.

ACADEMIC MISCONDUCT

Academic misconduct is any action or attempted action that may result in creating an unfair academic advantage for oneself or an unfair academic advantage or disadvantage for any other member or members of the academic community.
Any academic misconduct is directly referred to the concerned Faculty/Chairperson/ Dean. The Dean of Students may assist if asked in the investigation and/or information gathering. The academic misconduct may include: cheating and assisting in cheating, plagiarism, class disruption, and academic dishonesty (e.g., stealing or damaging library books, unlawfully copying computer software, violating program and degree requirements established by the University, etc.), per the Student Code of Conduct: https://www.ndu.edu.lb/Library/Assets/Files/Documents/Policies/Student%20Code%20of%20Conduct.pdf

CHANGE OF MAJOR

1. Within a Faculty

To be eligible for a change of major within the same faculty, the student must meet the requirements for admission to the new major. He or she must submit an e- petition for a change of major. The request for the student's admission is considered by the new Department and by the Dean concerned.

- New students are eligible to change major upon the completion of their first semester.

2. To a Different Faculty

A student moving into another Faculty within the University is considered a new student by the new Faculty. The student is required to fill in an e- petition for a change of major.

3. By University Action

A student may be asked to change his or her major for any of the following reasons:

- If he or she is on probation and fails at the end of a semester or Summer session in two or more of his or her major and/or core courses; and
- If he or she fails to pass a major course after having repeated it twice.

GRADUATION REQUIREMENTS

Degree Requirements

Students are required to fulfill the following requirements in order to be eligible for a Bachelor's degree:

- Completing all required credits for the degree;
- Fulfilling satisfactorily all course requirements for the degree as well as remedial/ intensive courses given upon admission;
- Fulfilling all other admission requirements;
- Satisfying the residency requirements for the degree;
- Maintaining the required minimum cumulative GPA for the major and core courses required for the degree, as specified by the Department concerned;
- Maintaining good academic discipline; and
- Settling all accounts with the University.

These conditions must be met together with the degree requirements in effect during the semester of the student's first registration at NDU. This shall also apply to reinstated students. Readmitted students, however, must meet the degree requirements in effect during the semester of their readmission, unless their readmission letter states otherwise. Students who do not have the required cumulative GPA of 2.0/4.0 for the degree and/or the required cumulative GPA for the major and core courses required for the degree, but have completed all other requirements, may repeat up to 5 courses, as approved by the academic advisor, to meet the required numerical level(s).
Diplomas are only issued once.

Second Degree Requirements

A student with a Bachelor's degree may register for another degree at NDU after being accepted by the University. Such a student must:

- Satisfy all the MEHE and program requirements of the new degree;
- Satisfy all the requirements for the new degree in accordance with the statements of Section I of this policy;
- Have a residency of at least 50% of the regular residency requirements of the concerned program;
- Complete at least 50% of the second degree requirements including LAC and free elective courses; and
- Architecture and FE Students must fulfill a minimum residency requirement of 125 credits with a minimum cumulative GPA of 2.0/4.00.

TEACHING DIPLOMA REQUIREMENTS

A holder of the official Lebanese Baccalaureate Part II or its equivalent will be eligible for a Teaching Diploma upon completing satisfactorily at least 21 credits beyond his or her Bachelor's degree with a cumulative GPA of at least 2.0/4.0

CONFERRING OF DEGREES

Degrees are conferred three times a year, at the end of Fall, Spring, or Summer session. Students expecting to graduate must fill in the online exit survey and application for Graduation on SIS as per announced deadlines.

Students should check their graduation clearance on their SIS at the end of their last semester.

Any delay in submitting the application may delay graduation.

REPLACEMENT DIPLOMA

NDU will provide a replacement diploma in situations where the original is lost or destroyed. The replacement diploma must be ordered online and/or in person by filling a form available at the Office of the Registrar. An "Authorization Form" is required to be filled if the graduate wants someone else to pick up the replacement diploma on his or her behalf. Each replacement diploma follows the current diploma format and includes a notation stating that the diploma is a replacement of the original. The replacement diploma will bear the date of its preparation and will annotate the date of the lost/ destroyed original. All replacement diplomas bear the signatures of the current University President, Faculty Dean, and Registrar.

RESIDENCY REQUIREMENTS

Residency Requirements for Bachelor of Arts, Bachelor of Science, Bachelor of Business Administration, and Bachelor of Hotel Management

There are two kinds of Government Regulations for the BA, BS, BA, BHM:

1. Minimum Residency: A minimum of 8 semesters of residency is required, beginning with the Freshman Class, or 6 semesters beginning with the Sophomore Class. Two Summer sessions are equivalent to one regular semester. This period of time must be spent at a recognized and accredited institution of higher education; however, at least 50% of the credits requirement must be completed at NDU with a cumulative GPA of 2.0/4.0, in addition to all other graduation requirements for the degree.
2. Maximum Residency: A maximum of 16 semesters of residency is allowed, beginning with the Freshman Class, and 12 semesters, beginning with the Sophomore Class.

Residency Requirements for the Bachelor of Engineering

A minimum of 10 semesters and a maximum of 20 semesters, in addition to all requirements listed under the Office of Admissions.

Residency Requirements for the Bachelor of Architecture

A minimum of 10 semesters and a maximum of 20 semesters, in addition to all requirements listed under the Office of Admissions.

Residency Requirements for the Bachelor of Law

1. A minimum of 8 semesters and a maximum of 16 semesters.
2. At least the last 50 % of the degree requirements must be completed at NDU in addition to all other graduation requirements for the degree.

PARTICIPATION IN COMMENCEMENT EXERCISES

The University encourages all graduates to participate in the Commencement exercises.

COURSE DESIGNATION

A. Designation and Belonging

The letters preceding the course number indicate the area or subject of study to which the course belongs. The following is a designation list grouped by Department and Faculty affiliations.

Ramez G. Chagoury Faculty of Architecture, Arts and Design (RC-FAAD)

Department of Architecture

ARP - Architecture
MAR - Architecture

Department of Design

IDP - Interior Design
GDP - Graphic Design
FTP - Fashion Design
FDP - Design
PDP - Photography
MAD - Design
FAP - Studio Arts

Department of Music

MUJ - Jazz Music
MUM - Musimedialogy
MUS - Musicology

Faculty of Business Administration and Economics (FBAE)

Department of Accounting and Finance

ACO - Accounting
BAF - Banking and Finance
FEN - Financial Engineering

Department of Economics

ECN - Economics

Department of Management and Marketing

MGT - Management
HCM - Health Care Management*
MRK - Marketing
HRM - Human Resource Management
ENT - Entrepreneurship

Department of Hospitality and Tourism Management

FBM - Food and Beverage Management
TTM - Travel and Tourism Management
HTM - Hospitality Management
HVM - Hospitality Events Management

*Not offered at the present time

Graduate Division
FIN - Finance
QMT - Quantitative Methods
BUS - Business
HRM - Human Resources
MBS - Business Strategy
MGT - Management
MRK - Marketing
ECN - Economics
ACO - Accounting
FRM - Financial Risk Management
PRM - Project Management

Faculty of Engineering (FE)
ENG - General Engineering
Department of Civil and Environmental Engineering
CEN - Civil Engineering
PEN - Petroleum Engineering
Departments of Electrical and Computer and Communication Engineering
EEN - Electrical Engineering and Computer and Communication Engineering
Department of Mechanical Engineering
CHE - Chemical Engineering
MEN - Mechanical Engineering

Faculty of Humanities (FH)
Department of English and Translation
ARB - Arabic
CHI - Chinese
ENL - English
FRC - French
GEM - German
INT - Interpretation
ITL - Italian
LIR - Literature
LTN - Latin
POR - Portuguese
ROC - Romance Languages
SPA - Spanish
SYR - Syriac
TRA - Translation
Department of Media Studies
ADM - Advertising
AVF - Audio Visual and Films
COA - Communication Arts
JOU - Journalism
Department of Psychology, Education, and Physical Education
EDU - Education
PES - Physical Education
PSL - Psychology

Department of Religious, Cultural, and Philosophical Studies
PHL - Philosophy
REG - Religion
SOL - Sociology

Faculty of Law and Political Science (FLPS)
Department of Government and International Relations
IAF - International Affairs and Diplomacy
INL - International Law
PAD - Public Administration
AMS - American Studies
EMS - Euro-Mediterranean Studies
HIT - History
NGO - Non-Governmental Organization
POS - Political Science
Department of Law
LAW - Law

Faculty of Natural and Applied Sciences (FNAS)
Department of Computer Science
CSC - Computer Science
GIS - Geographic Information Systems
MIS - Management Information Systems
Department of Mathematics and Statistics
ACS - Actuarial Sciences
FMA - Financial Mathematics
MAT - Mathematics
STA - Statistics
Department of Physics and Astronomy
AST - Astronomy
PHS - Physics
Department of Sciences
BIO - Biology
CHM - Chemistry
ENS - Environmental Science
GEO - Geology

Faculty of Nursing and Health Sciences (FNHS)
NHS - Nursing and Health Sciences
NUR - Nursing
HEA - Health
MLT - Medical Laboratory Technology
NTR - Nutrition and Dietetics
FQM - Food Safety and Quality Management

B. Digits of a Course Number

The following digits are used as follows:

First Digit	FNAS, FNHS, FBAE, and FH	ENG, RCT, VIA
0	Non-Credit Remedial Courses	Year 0
1	Freshman Course	Year 1
2	Sophomore Course	Year 2
3	Junior Course	Year 3
4	Senior Course (Undergraduate Only)	Year 4
5	Courses that are considered preparatory for graduate studies. When passed, their credits should not be counted in the total of credits required for graduation and they should be completed during the first academic year.	Year 5
6 or higher	Graduate Course	Year 6
Second Digit for Undergraduate and Possibly Graduate Courses		
0	Basic Level Course	
1	Elementary Level Course	
2-4	Intermediate Level Course	
5	Advanced Level Course	
6	Special Topics or Practicum I	
7	Laboratory Workshop or Practicum II	
8	Seminar or Internship	
9	Senior Study, Senior Project, Thesis, or Research Project	
Third Digit	Any digit ranging from 0 to 9	

C. Course Number, Title, and Credits

MAT 215	Linear Algebra I	(3.0)	3 cr.
Official Course Code (Number Abbreviation)	Official Course Title	The first component of the above ordered pair designates the number of lecture hours/week. The second component is the number of laboratory hours/week.	Number of credits (cr.) earned if course is successfully completed.

Lecture hours/week lasts for a period of 50 minutes.

Credits are based upon the number of 50-minute periods scheduled weekly during one semester or Summer session. One credit signifies a minimum of either a 50-minute period of class work, or 2-3 hours of laboratory work over a period of 15 weeks or its equivalent.

D. Course Prerequisite and Corequisite

A prerequisite is a course that must be completed before registering for the subject course.
A corequisite is a prerequisite course that may be taken concurrently with the subject course.

UNDERGRADUATE REGISTRATION

Upon admission and prior to registration, each student shall be assigned an Academic Advisor. The student shall seek the Academic Advisor's support on the following:

- Taking remedial courses (if any), as specified in the letter of acceptance;
- Meeting the Academic Advisor during office hours, and when necessary by appointment, throughout the academic year;
- Ensuring proper fulfillment of all degree requirements;
- Reviewing his or her Contract Sheet on a regular basis throughout his or her residency at NDU; and
- Familiarizing him/herself with the University's academic rules, regulations, and policies and understanding the registration process, course offerings, degree planning, and course substitution or other related matters. (https://www.ndu.edu.lb/about-ndu/administration/offices/registrars-office).

Students are encouraged to consult with their Academic Advisors on a regular basis throughout their residency at NDU.
The Department of Academic Advising at the SAO is available to assist students experiencing any academic difficulties.

REGISTRATION ELIGIBILITY

An undergraduate student will be eligible for registration upon settling all previous pending issues (academic, financial, disciplinary, administrative, etc.) with the University at the offices concerned. Otherwise, he or she cannot proceed any further with his or her registration.

REGISTRATION

https://www.ndu.edu.lb/about-ndu/administration/offices/registrars-office/registration/registration-dates
The registration date and time for undergraduate students is assigned by the Office of the Registrar. To register, a student should:

- Receive on SIS tuition statement from the Business Office;
- Pay the appropriate tuition and fees to the allotted bank(s);
- Remove all the hold (if any)
- Prepare his or her course schedule; and
- Register and confirm his or her courses.

New students should register at the office of the designated Academic Advisor.

REGISTRATION IN ABSTENTIA

An NDU undergraduate student is allowed to register in absentia (or by proxy) through certain legally recognized individuals (i.e., parent, sibling, or the like) under justifiable reasons, such as illness, being abroad, etc. Such students shall be entirely responsible for any discrepancies in his or her proxy registration.

LATE REGISTRATION

Students registering during the late registration day shall are responsible for all work assigned from the beginning of the semester or the session. They shall be also subject to the requirements of the attendance policy as of the first day of classes.

CROSS-REGISTRATION

An NDU undergraduate student may be allowed to cross-register in a course at another institution if:

- The course is not offered at NDU during the semester in which the student is expected to graduate;
- The course in which the student intends to cross-register is equivalent to his or her required course at NDU;
- The course does not conflict with his or her course schedule at NDU;
- The student has the Cross-Registration and Registration Forms signed by his or her Department Chairperson and Academic Advisor as well as the Office of the Registrar and the Business Office;
- The student returns the appropriate Cross-Registration form(s) to NDU's Office of the Registrar after officially registering at the other institution; and
- The student has to submit an official transcript of records for his or her cross-registered course to the Office of the Registrar at NDU.

A non-NDU undergraduate student may be allowed to cross-register in a course at NDU upon submission of a written authorization from his or her institution allowing him or her to register for this course at NDU in accordance with the University Undergraduate Registration Policy.

EXCHANGE STUDENTS REGISTRATION

OUTGOING EXCHANGE STUDENTS

• ELIGIBILITY REQUIREMENTS

In order for the applicant to be eligible for the student exchange program, the following criteria must be met:

a) The applicant has to have:
- A current enrollment at NDU;
- Successfully completed at least 15 credits of study;
- No record of failing a course in the program in which the applicant is enrolled;
- A minimum GPA of 2.5/4.00 (undergraduate) and 3.00/4.00 (graduate);
- Provided an academic recommendation from an appropriate faculty member and a statement of purpose;
- A proven record that he or she is socially, psychologically, and intellectually fit for an exchange program;
- A record of proper conduct; and
- No outstanding financial record.

b) The student is expected to be in good health.

c) The applicant has to agree to:
- Be responsible for meeting all costs of the student exchange program, such as travel, accommodation, and insurance, and pay all administration fees to NDU by the due dates;

- Enroll at the Host Institution for no more than two semesters and one Summer, unless specific circumstances require other arrangements to be made; and

- Abide by the rules and regulations of the Host Institution.

d) Where there are more applicants than places available for a given institution, eligible students will be ranked according to academic merit and may be offered a student exchange program at their second or third preferred institution.

• REGISTRATION REQUIREMENTS

a) The NDU Registrar will register a student for courses if the student presents a properly signed form listing the course(s) to be taken at the Host Institution (see the attached form).

b) The student must have completed all course prerequisites.

c) All credits earned will be considered as resident credits at NDU for degree purposes.

d) At the end of the period of study at the Host Institution, no official diploma or certificate whatsoever will be delivered to the student, but an official transcript of records will be issued for the exclusive purpose of transfer to the Home Institution.

e) An exchange student is entitled to an enrollment statement from NDU.

• APPLICATION PROCESS

Students who wish to participate in a student exchange program are required to:

a) Complete and submit an application form with the OIR by the date specified on the application form;

b) Agree in writing to the terms and conditions set out in the student exchange program; and

c) Be aware that the attainment of the official transcript of grades from the Host Institution is the student's responsibility, and the P/NP (Pass/Not Pass) grading system is adopted.

INCOMING EXCHANGE STUDENTS

• ELIGIBILITY REQUIREMENTS

Student exchange programs at NDU are short-term programs that enable international students to study for up to two academic semesters and a Summer session (one academic year, not renewable) in any of the NDU campuses.

• REGISTRATION REQUIREMENTS

The NDU Registrar will register a student for courses if the student:

a) Presents a properly signed form listing the course(s) to be taken; and

b) Has completed all prerequisites of the courses to be taken.

All credits earned shall be considered as resident credits at NDU for degree purposes. The registration of exchange students is valid for one academic year and is not renewable. At the end of the period of study, no official diploma or certificate whatsoever will be delivered to the student; only an official transcript of records will be issued for the exclusive purpose of transfer to the Home Institution.
An exchange student is entitled to an enrollment certificate from the Home Institution.

• REGISTRATION PROCEDURES

For registration, an incoming exchange student will observe the following steps:

a) Secure an official exchange form from the Home Institution.

b) Hand in all the required documents to the Director of OIR.

c) Obtain an acceptance letter as an exchange student from the Office of Admissions.

d) Proceed to the Office of the Registrar in order to finalize registration.

e) The NDU Registrar will sign the student exchange program form. The following copies should be distributed:
- Copy to the Host Institution;
- Copy to the Business Office;
- Copy to the Office of the Registrar;
- Copy to the OIR; and
- Copy to the student.

IMPROPER REGISTRATION

Only students officially enrolled in a class are allowed to attend the class. The instructor of the class should inform any non-officially enrolled student of his or her improper registration and should immediately report it, in writing, to the Office of the Registrar, and should also ask the student to immediately proceed to the Office of the Registrar for a settlement.

CHANGES IN REGISTRATION

Changes in registration become effective and official on the date the approved completed form is submitted to the Office of the Registrar, accepted, and processed, and the financial obligations resulting from these changes are settled with the Business Office.

ADDING AND/OR DROPPING COURSES

A student may add or drop a course or change a section in his or her registration schedule during the Drop/Add day only. This can be done by:
- A student may drop or add a course(s) independently via SIS or at the office of the Academic Advisor;
- In the Drop/Add period, two modifications are allowed by the student;

- In case a section is closed, or a student wishes to wave prerequisites/corequisites and the like, only during Drop/Add period he or she has to fill in a Drop/Add form to secure the signature of the Coordinator or Chairperson and or Dean concerned; and
- Receive his or her modified tuition statement from the Business Office.

WITHDRAWAL FROM COURSES

Students may withdraw any time prior to the 14th week of the Fall or Spring semesters and before the 28th day of the Summer session upon settling all due fees. Then a grade of **"W"** will be inscribed on their records.
The third withdrawal will turn to **"F"** for any class from which students attempt to **withdraw.**
The official withdrawal is processed by initiating the electronic drop and submitted it via SIS.

Withdrawal after the deadline will result in an **"F"** or **"UW"** in the dropped course. No withdrawal is allowed beyond this period unless the student submit an e-petition on SIS due to urgent reasons.

ATTENDANCE AFTER WITHDRAWING

Once a student has withdrawn from a course, he or she cannot continue to attend or audit this course during the same semester.

STUDENT REINSTATEMENT

Upon return, a student shall inform online the Office of the Registrar for reinstatement.

DROPPING A COURSE WHILE ON PROBATION

A student on probation may drop any course during the probation period.

REGISTRATION IN A COURSE WITH AN "I" GRADE

Students may not register in a course if he or she has an incomplete grade in its prerequisite(s).

STUDENT ACADEMIC LOAD

Full-Time and Part-Time Loads
Registration in at least 12 credits for the Fall or Spring semester constitutes a full-time load for an undergraduate student. Otherwise, it constitutes a part-time load.

Maximum Load for Registration per Semester
The maximum load for registration during the Fall or Spring semester by any undergraduate student is either 17 credits or the number of credits specified in his or her suggested program for that particular semester. Students in good academic standing, however, can take up to 19 credits per semester provided that this number of credits does not contradict any residency requirements. Students with a cumulative GPA of 3.50 and above may petition to register for one additional 3-credit course over and above the regular load. This additional load may be approved provided the residency requirements are met.

The maximum load for registration for Engineering students is specified in their suggested program.

Maximum Load for Registration in the Summer Session
The maximum load for registration by any undergraduate student in the Summer session is 9 credits or less, as determined by the Faculty concerned.

Maximum Load for Students on Probation
Students who are on probation may register for a maximum of 13 credits per semester, of which at least 9 credits from courses that must be repeated, if any.

Maximum Load for Students with Incomplete(s)
Students who have 2 or more incomplete grades from a previous semester or the Summer session may register for a maximum of 15 credits per semester on the condition that the student has good academic standing.

Maximum Load for Students with Cross-Registration
The combined load for students with both registration at NDU and cross-registration in another institution must not exceed the maximum load stated above.

• TUITION AND FEES[1]

NDU is a non-profit institution. Tuition and fees paid by students represent a small percentage of the full cost of a student's education. The deficit is covered by income from gifts, grants, and donations from foundations, alumni, and friends of the University. The fees cover applications, membership in the National Social Security Fund (NSSF), and the technology and student services fee. Membership of Lebanese students in the NSSF is mandatory by law. Thus, prior to registration, students are urged to follow the instructions given by the Office of Student Affairs, concerning clearance for the NSSF.

Undergraduate – Tuition/Credit Hour

Architecture	USD 440
Business	USD 395
Computer Sciences	USD 440
Engineering	USD 470
All others	USD 380
Intensive English	USD 2,880
Auditing/Credit Hour/Semester	LBP 75% of credit tuition

Fees

Admission Application		USD 30
Change of Major		USD 60
Entrance Examination (When applicable)	(for one test)	USD 30
Entrance Examination (When applicable)	(for two tests)	USD 50
Diploma		USD 60
Diploma Replacement		USD 200
Incomplete/Make-up Final Examination		USD 75
Late Registration		USD 75
Late Payment		USD 60
Medical Fees (New students)		USD 60
NSSF Fees (When applicable)		LBP 5,400,000
Petition		USD 10
Smart ID Card (New students and replacement cost)		USD 20
Statement of Fees		USD 10
Transcript (Official copy)		USD 10
Transcript (Student copy)		USD 5

[1] These are the fees for the Academic Year 2024-2025 and are subject to change for Academic Year 2025-2026
[2] As of the Fall 2024 semester, credit prices are to be paid as follows:
- 85% in cash USD
- The remaining 15% in cash LBP at the USD/LBP 15,000 exchange rate

Technology and Student Services Fee

* Fall Semester USD 450
* Spring Semester USD 450
* Summer Session USD 200
* Including Office 365, cloud space, Smart ID maintenance, medical insurance, and Medical House services.

A student may not complete registration, graduate, or receive a transcript of record until all fees are paid.

Refund Policy
The University makes contracts with faculty members and provisions for education in advance for the entire year. The Tuition Refund Policy, therefore, is based on the following:

- Students who do not confirm their registration for the Fall and Spring semesters are charged 25% of the registered credits;
- Students who confirm their registration for the Fall and Spring semesters are not charged any penalty on the condition that they maintain 12 undergraduate credits and/or 3 graduate credits;
- During the Drop/Add period, 75% of the tuition is refunded;
- Tuition is nonrefundable after the Drop/Add period; and
- The refund policy applies during Summer sessions on the condition that the student maintains 3 credits.

Financial Support for Re-enrolled courses
Students who re-enroll for any reason in any course shall not benefit from any financial support.

UNDERGRADUATE ACADEMIC MINORS

RATIONALE

The objective of establishing undergraduate academic minors, hereafter called minors, at NDU is to offer a wide, versatile, and creative spectrum of basic knowledge for students in areas other and their major programs of study, an objective that is in line with the American liberal arts model of higher education. Additionally, establishing minors enhances the appeal of the Departments and Faculties in terms of allowing them to offer relatively quick training or specialization programs to interested students.

The establishment of undergraduate academic minors is a matter that is internal to the University and is outside the scope of governmental licensing and recognition.

The following rules and regulations do not allow students to enroll in the University for the sole purpose of pursuing minor studies.

GENERAL RULES AND REGULATIONS FOR MINORS AT NDU

Number of Credits for Minors
A minor shall consist of 15 cr. to 18 cr. A minor may not include more than 2 courses, which are counted in the student's "Major Requirements" category.

Eligibility for Minors
Only enrolled students at NDU and in Junior Standing and above can declare minors.

Declaring Minors
A student wishing to declare a minor should do so through an appropriate request form submitted to the Department or Faculty concerned offering the minor. Approval by the latter is required prior to registration.

Contract Sheets and Advisors for Minors
Each minor has a separate Contract Sheet specified and supplied by the Department or Faculty offering the minor. Students declaring a minor must follow the corresponding Contract Sheet with the assistance of an Academic Advisor, preferably the same person advising the student in his or her major. The student and his or her advisor are recommended to closely communicate with an advisor from the chosen minor. All Academic Advisors in the University should be aware of the different minors offered across the University so that they can assist their advisees toward a specific minor.

Pursuing More than One Minor
Students are allowed to satisfy the requirements for a maximum of 2 minors, provided that they do not pursue more than 1 minor at a time. Accordingly, declaring an additional minor is conditional either to the successful satisfaction of the requirements of an already declared minor or to the official withdrawal from a current minor.

Withdrawing from Minors
A student is allowed to officially withdraw from a declared minor no more than twice.

Students on Probation
Students on probation cannot declare minors.

Passing Grades and GPAs for Minors
The passing grade for a minor shall be specified by the Department or Faculty offering the minor, provided that the acceptable overall GPA for any successfully completed minor is not below 2.0.

Overall GPA
A student, with or without a declared minor, shall have one, and only one, overall GPA, including every course taken. A separately calculated GPA for the minor shall be considered by the Registrar for the sole aim of judging the successful fulfillment of the requirements for that minor.

Minor Courses and Graduate Studies
If any, a student applying for graduate studies is allowed to use earned minor credits as remedial credits upon the approval of the Faculty concerned.

Graduation and Minors
A registered student pursuing a major degree with a declared minor is allowed to graduate when the requirements of both the major degree and the minor are satisfied.

Recognition of Minors by the University
The University shall recognize only a completed minor, and solely by a specific acknowledgement of the completion of a minor on the student's transcript of records and, upon the student's request, by an official statement from the Registrar. The University does not issue any diploma or certificate recognizing the completion of a minor.

Additional Requirements
Within the previously mentioned rules that give the general guidelines for all minors, Departments and Faculties have the right to state additional requirements for their minors, as they deem necessary.

SELF-DESIGNED INTERDISCIPLINARY MINORS

NDU aims to provide the students with the programs they need for their future and offers them the opportunity to design their own Self-Designed Interdisciplinary Minors program. Students who would like to explore this option have to fill in the minor proposal with the collaboration of the Faculties and Office of the Registrar.
The Following guidelines, rules and regulations apply for proposing a Self-Designed Interdisciplinary Minor:

PROPOSAL GUIDELINES FOR SELF-DESIGNED MINORS

1. The student should choose a title and develop a rationale for the minor with his or her academic advisor in consultation with one Advisor from each Department that best represents the topic of the proposed Self-Designed Minor.
2. The rationale should reflect how this Self-Designed Minor creates an intellectually coherent and focused course of study.
3. An application form with the rationale should be presented to an ad-hoc committee comprising Chairpersons and Deans of the concerned minor. The ad hoc committee is formed upon the request of the Dean of the student's Faculty.
4. The ad hoc committee will invite the student and his or her advisor to a meeting where the Self-Designed Minor would be presented and discussed, upon which the committee may request modifications as required and recommend approving or rejecting the proposal.

RULES AND REGULATIONS FOR SELF-DESIGNED MINORS

1. The minor should be substantially different from all existing minors (less than 50% of overlap).
2. The minor should have between 15 - 21 cr.
3. A maximum of 6 credits from courses designated in the Self-Designed Minor may be completed prior to the approval of the Self-Designed Minor.
4. A maximum of two 200 level courses designated in the Self-Designed Minor may be taken in the minor to allow the student to have enough in-depth knowledge of the subjects of study.
5. The same rules and regulations currently applied to NDU minors will be applied to the Self-Designed Minors in terms of GPA requirements, declaration time, as well as the number of substituted credits from the student's major or LAC courses.
6. A certificate would be issued upon graduation confirming the completion of the minor studied.
7. The Advisor should follow up with the student on a semester basis.
8. The Self-Designed Minor/Contract Sheet is binding to the list of courses; the student may substitute a course in the minor through a petition to the ad hoc committee in case one course is not offered during the student's course of study.

ACADEMIC RULES AND REGULATIONS (GRADUATE)

TRANSFER STUDENTS

Students holding a master's degree or pursuing a master's degree at another accredited institution of higher education, a maximum of 9 transfer credits is permitted.

CROSS-REGISTRATION

Students enrolled at NDU may take courses at other recognized institutions of higher education.
A student registered at NDU may be permitted to cross-register if:

- He or she expects to graduate at the end of that particular semester and the course is not offered at NDU but is a graduation requirement;
- The course to be taken carries the same content as that offered at NDU; and
- The student's academic advisor sends a written statement to the NDU Office of Admissions and Office of the Registrar who in turn contact their counterparts of the university concerned to confirm the conditions mentioned above.

Students enrolled at other recognized institutions of higher education may take courses at NDU. Students studying at other universities and who wish to take courses at NDU must secure the following to facilitate cross-registration:

- Written permission by the academic advisor to take specified courses at NDU (if any of the above mentioned conditions apply to the incoming student);
- The permission of the Faculty concerned at NDU;
- The above documents are submitted to the NDU Office of Admissions and the Office of the Registrar by their counterparts; and
- Finalize registration according to cross-registration procedures at NDU.

AUDITING

An auditor is a student who has been admitted to course(s) after having satisfied the requirements for admission as deemed by the Department concerned. He or she is required to pay 75% of the course(s) fees. Once an auditor is registered, he or she cannot change his or her status back to credit. Grades and credits will not be given for an auditing course(s) and hence cannot be counted for financial aid purposes. However, students are entitled to a statement of enrollment upon request.

TUTORIALS

To meet graduation requirements, students may take courses on a tutorial basis. Registration for a tutorial course can only happen after the consent of the concerned professor and the approval of the respective Faculty.

COURSE/PROGRAM CHANGES

Any change from one graduate degree to another requires students to reapply and meet the admission requirements of the requested graduate program. Required courses may be substituted upon the recommendation of the student's graduate advisor and the approval of the respective Faculty. A maximum of 9 substitute credits will be considered.

THESIS/PROJECT SUPERVISION

Prior to or upon enrollment in the thesis course, and after consultation with the Department Chairperson, a student will approach faculty members for potential supervision according to their field of expertise. Upon the supervisor's recommendation that the thesis is ready for defense, the Chairperson will set the defense date with the Thesis Committee.

COURSES AND GRADES

Courses taken as part of a student's graduate study program fall in one of two categories, graduate or remedial, each governed by different grading systems.

Graduate Level Courses
These are normally numbered 600 and above. The minimum passing grade for a graduate course is "B." Students in graduate study are required to maintain a cumulative average of at least "B" in all courses taken for graduate credit. According to the NDU Attendance Policy, a student who is absent without excuse from more than one-third of the number of sessions in any one course, or who fails to sit for scheduled examinations, or fails to fulfill required written or oral work, will be given "F." Results of tutorial courses and projects will be reported as Pass "P" or Fail "F."
Grades on thesis courses may be assigned as either Pass ("P") or Fail ("F"), or as letter grades ("A+," "A," etc.).
The Faculties' grading system for these courses is as follows:
FAAD, FBAE, FH, FLPS and FNAS: letter grades; FE and FNHS: "P" or "F."

Remedial Courses
These are usually undergraduate courses, taken to make up for any particular deficiencies. They do not carry graduate credit. The minimum average passing grade required is 2.7 on the pools of remedial courses for all graduate programs. however, a Department or program may set a higher minimum passing grade.

GRADES UPON CHANGE OF MAJOR

Upon approval of change of major, all grades on transferable or non-transferable courses taken by a student in his or her old major/area of concentration remain part of his or her official transcripts. Unlike the transferable grades, the non-transferable ones are not computed in the student's GPA for the new major and are not counted toward the total number of credits required for graduation for the new major. A student cannot ask for a non-transferable course to be computed back in his or her GPA.
The students who benefited from the above rule cannot return to their old major, and cannot request to have their major changed again to any major which requires a nontransferable course grade, which was deleted from his or her GPA.

PROBATION AND DISMISSAL

Graduate students may be placed on academic probation if they fail to maintain a minimum GPA of 3.0. Students admitted to the graduate program on probation must maintain course grades of "B" and a GPA of 3.0 within two consecutive semesters of enrollment.
A graduate student on probation may register for a maximum of 6 credits in the following semester.

A graduate student on probation is dismissed from the program if:

- The probation status is not removed within two semesters during which the student is registered; or
- The student fails the thesis/project defense twice.

THESIS

As part of the requirements for the master's degree, students must submit a thesis, when applicable, based on results of original and independent research. Except in Departments or programs in which the language of instruction is not English, the thesis must be in English.

An abstract not exceeding 350 words must be submitted with the thesis. If the thesis is in a language other than English, the abstract must be written both in that language and in English.

The Department concerned must ensure the availability of a copy of the Thesis Manual, which provides instructions on the preparation of theses. Its application is mandatory and theses not conforming to its requirements will not be accepted. For all matters not discussed in the manual, theses must follow the form and style described in the latest edition of K. L. Turabian, Manual for Writers of Term Papers, Theses and Dissertations (University of Chicago Press), or any other form specified by the Department or program provided this conforms to the manual.

Copies of the thesis, unbound but ready for binding, should be submitted to the members of the Thesis Committee at least 2 weeks before the defense. Copies may be obtained by any legible and durable form of reproduction. Additional copies may be required, as specified by the Department or program concerned.
In a thesis course, a grade of "PR" could remain on the student's transcript for three consecutive, regular semesters, after which a different grade should be assigned. A student may petition for an extension beyond the three semesters if justified by the student's thesis advisor. Otherwise, the "PR" grade will automatically turn into "F."

Thesis Committee
The Master's Thesis Committee should be composed of at least three members recommended by the Department or program and approved by the Faculty Graduate Committee. The proposal of the thesis topic and the selection of the advisor and the members of the Thesis Committee for candidates for the master's degree should have been approved by the Faculty or Graduate Committee at least four months before the student defends the thesis. It is advisable that the Thesis Committee includes one external member. This member may be from an institution other than NDU. All committee members should hold professorial ranks. The Thesis Committee approves the thesis topic and research program and conducts the thesis defense examination.

Thesis Defense
The thesis defense may be open to the public and must be carried out no later than June 10, October 30, or March 1 for students who wish to graduate at the end of the Summer session, the Fall, or the Spring semester respectively.
"Pass" or "Fail" is reported for the combined thesis and thesis defense. If "Fail" is reported, the student may resubmit the thesis and defend it after a period of at least three months. Failure on the second attempt results in discontinuation from graduate work. Students must be registered for the thesis or at least one course in the session in which they expect to graduate in order to present their defense.

Deposit of the Thesis in the University Institutional Repository (IR)
After passing the thesis defense examination, the student is required to deposit an electronic copy of the final approved thesis, including a scanned copy of the signature page, in the University Institutional Repository (IR). After the Library verifies deposit of the thesis in the IR they will inform the Office of the Registrar so that the student will be awarded the degree. When submitting the thesis to the IR the student must sign a release form, indicating whether or not the University Library is authorized to supply copies of the thesis to other libraries or individuals. The non-authorization option is valid for a period of two years only, after which copies of the thesis will be supplied on request.

Deadlines

	For graduation in		
	Fall	**Spring**	**Summer**
Deadline for approval of thesis topic and committee	June 20	Oct. 20	Feb. 1
Deadline for thesis defense	Oct. 30	March 1	June 10
Deadline for deposit of thesis in the IR	Jan. 15	June 15	July 31

PROVISIONS FOR THE MASTER'S DEGREE

In addition to satisfying the general requirements described in the preceding sections and the rules of the concerned Faculty, students working towards a master's degree must fulfill the below requirements.

Residency Requirements
To meet the minimum residency requirements for the master's degree, students must register and be in residence, as graduate students, for at least four semesters.
A transfer student must have a residency of at least three full semesters.
All requirements for the master's degree must be completed within a maximum period of four years after admission to the program. Extension beyond the maximum period of study requires the approval of the Faculty Graduate Committee.

GRADING SYSTEM

The University uses the following grading system for the graduate programs:

Grade	Description	Quality Points/Credits	Interval
A+	Outstanding	4.0	97 - 100
A	Excellent	4.0	93 - 96
A-	Skillful	3.7	89 - 92
B+	Very Good	3.3	85 - 88
B	Good	3.0	81 - 84
B-	Reasonably Good	2.7	77 - 80
C+	Satisfactory	2.3	73 - 76
C	Passing, but not satisfactory	2.0	70 - 72
F	Failure	0.0	0 - 69
UW	Unofficial Withdrawal	0.0	
W	Official Withdrawal		
I	Incomplete		
P	Passing		
R	Repeat		
PR	Progress, re-enroll		
UP	Unsatisfactory Progress		
U	Audit		

I This grade is given by an instructor only when there is reasonable expectation that a student will successfully complete course requirements. If this grade is unresolved by the 8th week of the following semester, the Registrar's Office will automatically convert it to the grade of **"F."** Degree candidates should be aware that an **"I"** grade received during the last semester in any of the courses required for graduation will result in the delay of graduation.

PR This grade is used to indicate progress on research for the Master's thesis or project up to time of completion, when the appropriate letter grade is entered on the transcript. In a thesis course, a grade of **"PR"** could remain on the student's transcript for three consecutive, regular semesters, after which the Registrar will convert it to the grade of **"F,"** and the student should register for the thesis and pay for it.

UP This grade is used to reflect that unsatisfactory progress is being made in a Master's research project or thesis.

W The grade **"W"** indicates withdrawal without academic penalty. This grade is issued by the Office of the Registrar to students filling in an official course withdrawal form by the scheduled deadline. The grade **"W"** is not counted in the GPA and may not be changed to any other grade under any circumstances.

UW The **"UW"** is assigned by the instructor when a student has never attended a class or has ceased attending and has not submitted an official course withdrawal to the Office of the Registrar. This grade is counted as an **"F"** in the GPA.

U Students have the option of auditing courses instead of receiving credits and grades for them. A **"U"** will appear on the student's permanent record.

ATTENDANCE POLICY

The University expects regular attendance from registered students in classes, laboratory sessions, and examinations. An absence, whether excused or not, does not absolve a student from the responsibility for the work done or from conforming to any announcement made during his or her absence.
A student is allowed a maximum of 6 hours in a 3-credit course. If a student exceeds the maximum allowed absences, then he or she shall automatically be unofficially withdrawn from the course.

ACADEMIC ADVISOR

Upon admission and prior to registration, each student shall be assigned an Academic Advisor. The student shall seek the Academic Advisor's support on the following:

- Taking remedial courses (if any), as specified in the letter of acceptance;
- Meeting the Academic Advisor during office hours, and when necessary by appointment, throughout the academic year;
- Ensuring proper fulfillment of all degree requirements;
- Reviewing his or her Contract Sheet on a regular basis throughout his or her residency at NDU;
- Familiarizing him/herself with the University's academic rules, regulations, and policies; and
- Understanding the registration process, course offerings, degree planning, and course substitution or other related matters.

Students are encouraged to consult with their Academic Advisors on a regular basis throughout their residency at NDU.

ACADEMIC HONESTY POLICY

It is the expressed policy of the University that every aspect of graduate academic life, related in whatever fashion to the University, should be conducted in an absolutely and uncompromisingly honest manner by graduate students.

The University Disciplinary Committee will deal with apparent and alleged breaches of this policy.

ACADEMIC STANDARDS

Continuation in the graduate programs requires satisfactory progress toward a graduate degree. Evidence of such progress includes maintaining a 3.0/4.0 cumulative average throughout the course of graduate study. Furthermore, in order to graduate, a student must have at least a 3.0/4.0 cumulative GPA.

Failure to obtain a GPA of 3.0/4.0 for the first twelve credit hours will result in notification of probationary status. Any student who does not remove his or her probation in two semesters will be suspended from the University.
A graduate student will also be suspended if he or she obtains two "Fs."

WITHDRAWAL POLICIES

Preceding the withdrawal policy in the Catalog (proposed statement):
Continuation in the graduate programs requires satisfactory progress toward a graduate degree. Evidence of such progress includes maintaining a minimum 3.0/4.0 cumulative average throughout the course of graduate study. A GPA minimum of 3.0/4.0 is likewise required for graduation.
Failure to obtain a GPA of 3.0/4.0 for the first twelve-credit hours will result in a probationary status. Any student failing to remove his or her probation status within two semesters will be dismissed from the University.

Leave of Absence
Graduate students may request a leave of absence from a program through an e- petition submitted to their Academic Advisors. A student who does not register for courses for more than one calendar year must apply for reinstatement to the graduate degree program.

Withdrawal from Courses
After the Drop/Add period, students are allowed until the end of the 14th week as of the beginning of a semester to withdraw from courses. A "W" will be inscribed on their records. No withdrawal is allowed beyond this period.

Late withdrawal may be accepted only in the case of illness or circumstances beyond control.

APPLICATION FOR GRADUATION

Students who expect to graduate must complete and submit on SIS the "Application for Graduation." Commencement is held once a year.

PARTICIPATION IN COMMENCEMENT EXERCISES

The University encourages all graduates to participate in the Commencement exercises.

SUMMER SESSION

The University may offer the opportunity to pursue graduate studies during the Summer. Although graduate-level courses are offered during the Summer session, the University does not guarantee that any particular course will be offered. A student may register for a maximum of 6 credit hours in the Summer.

GRADUATE RESEARCH ASSISTANTSHIP POLICY

Preamble
In accordance with the mission, vision, core values, and strategic goals of NDU, the Graduate Assistantship (GA) Policy is set to provide NDU students at the graduate level with opportunities to help them develop critical thinking, scholarly competence, cultural maturity, and professional experience.

Definition of a Graduate Assistantship Appointment
A graduate student is a valuable asset who may be offered an assistantship in the form of tuition waiver and/or stipend. A Graduate Assistantship (GA) offered to a student requires the fulfillment of tasks assigned by the respective Department related to teaching, research, or other duties.

GRADUATE STUDENT ASSISTANTSHIP RULES AND REGULATIONS

Introduction
A graduate student is a valuable asset who may be offered an assistantship in the form of tuition and fee waiver. A University Graduate Student Assistantship (UGSA) is offered to a student who is assigned as Graduate Teaching Assistant (GTA) or as Graduate Research Assistant (GRA) by the respective Department. A GTA will mainly teach remedial and/or introductory courses whereas a GRA will mainly be engaged in research projects under the supervision of a full-time faculty member. The objective of a UGSA is to increase the efficiency of teaching, enhance research activities, and promote NDU's graduate programs. In addition, it provides graduate students teaching and research opportunities that help them develop their critical thinking, scholarly competence, cultural maturity, and professional and administrative experiences in accordance with the mission, vision, core values and strategic goals of Notre Dame University–Louaize (NDU).

Eligibility
To be eligible, all applicants are expected to have a full-time load.

- NDU Students must have:
  (i) A minimum of 3.3 GPA in the undergraduate major;
  (ii) Three recommendation letters; and
  (iii) An interview by the concerned Faculty Graduate Committee.
- Applicants from other universities to NDU may be required to complete a minimum of 6 graduate credits at NDU with a GPA of 3.5 and above before being able to apply for GTA/GRA.
- Other grading systems will be assessed by the concerned Faculty Graduate Committee to determine the GPA in the major field of study.
- During the Summer session, graduate students may be eligible for a GTA/GRA depending on the approved needs of the respective Department.

Duration
A GTA/GRA is granted assistantship for the duration of one semester/Summer session.

Conditional Renewal
A GTA/GRA is renewed if:

a- The respective Department decides on the continuous need for an assistantship; and
b- The student maintains a GPA of 3.5 and above.

Duties of a GTA/GRA
A GTA/GRA will be assigned duties by the Faculty Graduate Committee upon the request of the Chairperson of the respective Department. The nature of the duties shall be defined by the concerned Department and shall not exceed 20 hours per week.

Selection Process and Appointment Procedure:
Upon announcement of a GA position by the Department concerned:

- A graduate student shall submit an application;
- The concerned Faculty Graduate Committee will oversee the selection process. It shall:
  (i) Review applications (transcripts, recommendation letters, etc.);
  (ii) Conduct interviews; and
  (iii) Evaluate a one-hour teaching presentation by the candidate.
- Upon the recommendation of the Faculty Graduate Committee, the concerned Dean shall offer the student, on behalf of the University, an official letter/contract for final signature.

Compensation
The GTA/GRA shall receive:

- Full tuition waiver;
- Fee waiver; and
- Student parking during the duration of the contract.

GRADUATE REGISTRATION

REGISTRATION PROCESS

Registration information and procedures are electronically communicated to every graduate, and involves the following steps:

Payment of Fees

The first step in registration is the payment of fees. Every registrant must pay the fees in full, or make arrangement for payment two weeks before the beginning of registration. Regardless of the manner of payment, every student must clear his or her registration with the Business Office. Outstanding balances must be settled in full before a student is allowed to register. Those who fail to honor the terms of the arrangement of payment of fees will be denied the privilege of future arrangements.

Consultation with Academic Advisors

Each student is assigned an Academic Advisor. With a proposed semester course schedule, the student proceeds to his or her advisor for consultation and the finalization of the selected courses. Students should consult with their Academic Advisors in the places assigned them for registration. The selection of courses is initially undertaken by the registrant himself or herself. Registration in absentia or by proxy is not permitted. Continuing students should check the course requirements as prescribed for every major, and compare them with the ones they have already completed. In light of this comparison, they should check the course offerings for the given semester and then fill in their semester course schedules. New students must make sure that all required documents, particularly those mentioned in the letter of admission, are submitted to the Office of the Registrar. They should also have in hand their letters of admission and identity cards or passports to present them to their advisors. Students should follow the steps indicated in the registration guide.

COURSE LOAD

A full-time graduate student must register for 9 credits per semester. Students registered for less than 9 credits per semester are considered part-time graduate students. Graduate students cannot register for more than 6 credits in the Summer session.

AUDITING

Students may register to audit courses. Courses in which a student is so enrolled carry no credit but are listed in the student's transcript as audit. The fee charged by the University shall be 75% of the fee paid by regular students. Student auditors should fulfill the same admission conditions as any other regular student.

DISCLOSURE OF STUDENTS' RECORDS

The University does not disclose information and academic records of any student except with his or her prior consent. Exceptions to this principle are made only in compliance with judicial orders and health or safety emergency.

•TUITION AND FEES[1]

NDU is a non-profit institution. Tuition and fees paid by students represent a small percentage of the full cost of a student's education. The deficit is covered by income from gifts, grants, and donations from foundations, alumni, and friends of the University. The fees cover applications, membership in the National Social Security Fund (NSSF), and the technology and student services fee. Membership of Lebanese students in the NSSF is mandatory by law. Thus, prior to registration, students are urged to follow the instructions given by the Office of Student Affairs, concerning clearance for the NSSF.

Graduate – Tuition/Credit Hour

Architecture	USD	670
Business	USD	635
Computer Sciences	USD	670
Engineering	USD	765
Remedial	USD	520
All others	USD	590
Auditing/Credit Hour/Semester	LBP	75% of credit tuition

Fees

Admission Application	USD	30
Change of Major	USD	60
Entrance Examination (When applicable) (for one test)	USD	30
Diploma	USD	60
Diploma Replacement	USD	200
Incomplete/Make-up Final Examination	USD	75
Late Registration	USD	75
Late Payment	USD	60
Medical Fees (New students)	USD	60
NSSF Fees (When applicable)	LBP	5,400,000
Petition	USD	10
Smart ID Card (New students and replacement cost)	USD	20
Statement of Fees	USD	10
Transcript (Official copy)	USD	10
Transcript (Student copy)	USD	5

[1] These are the fees for the Academic Year 2024-2025 and are subject to change for Academic Year 2025-2026

[2] As of the Fall 2024 semester, credit prices are to be paid as follows:

- 85% in cash USD
- The remaining 15% in cash LBP at the USD/LBP 15,000 exchange rate

Technology and Student Services Fee

* Fall Semester USD 450
* Spring Semester USD 450
* Summer Session USD 200
* Including Office 365, cloud space, Smart ID maintenance, medical insurance, and Medical House services.

A student may not complete registration, graduate, or receive a transcript of record until all fees are paid.

REFUND POLICY

The University makes contracts with faculty members and provisions for education in advance for the entire year. The Tuition Refund Policy, therefore, is based on the following:

- Students who do not confirm their registration for the Fall and Spring semesters are charged 25% of the registered credits;
- Students who confirm their registration for the Fall and Spring semesters are not charged any penalty on the condition that they maintain 12 undergraduate credits and/or 3 graduate credits;
- During the Drop/Add period, 75% of the tuition is refunded;
- Tuition is nonrefundable after the Drop/Add period; and
- The refund policy applies during Summer sessions on the condition that the student maintains 3 credits.

FINANCIAL SUPPORT FOR RE-ENROLLED COURSES

Students who re-enroll for any reason in any course shall not benefit from any financial support.

LAC, FRESHMAN PROGRAM, AND DEGREES

All students are required to complete the LAC program involving 30 credits in order to graduate. Programs of professional nature have a lighter LAC curriculum depending on the requirements set by the bodies governing the corresponding professions or the Ministry of Education and Higher Education.

Liberal Arts Curriculum (LAC)

The LAC program is distributed as follows:

Category I. English and Arabic Communication			**9 cr.**
A. English Communication			6 cr.
ENL	213	Sophomore Rhetoric	3 cr.
And			
ENL	223	Communication Arts	3 cr.
Or			
ENL	230	English in the Workplace	3 cr.
Or			
ENL	231	Work Ready Now	3 cr.
B. Arabic Communication (one course from the following pool)			**3 cr.**
ARB	211	Appreciation of Arabic Literature	3 cr.
ARB	212	Advanced Arabic Grammar	3 cr.
ARB	224	Arabic Literature and Human Thought	3 cr.
ARB	231	Technical Arabic	3 cr.
ARB	306	The Modern Arabic Novel and Short Story	3 cr.
ARB	310	Arabic Theater	3 cr.
Category II. Religion			**3 cr.**
REG	212	Religion and Social Issues	3 cr.
REG	213	Catholicism	3 cr.
REG	215	World Religions	3 cr.
REG	313	The Maronites: Faith and Cultural Heritage	3 cr.
REG	314	Marriage and Family in the Catholic Church	3 cr.
Category III. Ethics (Faculty-Dependent)			**3 cr.**
ARP	329	Ethics in Architecture and Design	3 cr.
CSC	203	Information Age and Ethics	3 cr.
COA	360	Media Ethics	3 cr.
ENG	310	Ethics in Engineering	3 cr.
ENS	205	Environment, Society, and Ethics	3 cr.
MGT	301	Ethics and Responsible Business*	3 cr.
NUR	203	Introduction to Bioethics	3 cr.
PHL	311	Ethics and the Modern World	3 cr.
POS	345	Ethics and Leadership	3 cr.
Category IV. Citizenship			**3 cr.**
ENS	202	The Environment and Sustainable Development	3 cr.
FQM	200	Food Security and Sustainability	3 cr.

*Compulsory for all undergraduate students enrolled in the FBAE.

POS	201	Introduction to Political Science	3 cr.
POS	209	Citizenship	3 cr.
POS	210	Government and Politics of Lebanon	3 cr.
POS	240	Law and Society	3 cr.
POS	319	Democracy and Human Rights	3 cr.

Category V. Cultural Studies and Social Science **6 cr.**

A. Cultural Studies 3 cr.

ARP	215	Cultural Themes in Lebanese Architecture	3 cr.
AVF	315	World Cinema Survey	3 cr.
COA	350	Current Issues	3 cr.
FAP	215	Art and Culture	3 cr.
HIT	211	History of Lebanon and the Middle East	3 cr.
HTM	201	Fundamentals of Hospitality and Cultural Tourism**	3 cr.
HTM	326	Lebanon's Cultural, Heritage, and Nature Tourism**	3 cr.
LIR	214	Introduction to Literary Genres	3 cr.
LIR	217	American Literature to the End of the 19th Century	3 cr.
LIR	305	Novel to the End of the 19th Century	3 cr.
MUS	210	Music Appreciation	3 cr.
NTR	215	Foods and Nutrition of World Cultures	3 cr.
PHL	211	Logic and the Scientific Method	3 cr.
PHL	232	Ancient World Philosophy	3 cr.
PHL	333	Medieval World Philosophy	3 cr.
PHL	334	Modern and Contemporary World Philosophy	3 cr.
POS	225	Politics of Catholic Social Theory	3 cr.
ROC	301	Romance Cultures	3 cr.

B. Social Science 3 cr.

CSC	206	Games and Society	3 cr.
ECN	211	Principles of Microeconomics	3 cr.
ECN	212	Principles of Macroeconomics	3 cr.
ENG	210	Introduction to Engineering Economy	3 cr.
ENG	220	Engineering Innovation	3 cr.
MGT	201	Fundamentals of Management	3 cr.
MRK	201	Fundamentals of Marketing	3 cr.
PSL	201	Introduction to Psychology	3 cr.
SOL	201	Introduction to Sociology	3 cr.
SOL	313	Family Violence.	3 cr.
SOL	316	Society and Women	3 cr.
SOL	322	Family: Sociological Perspectives	3 cr.
SOL	323	Society and Role of Global Intercultural Communication	3 cr.

Category VI. Applied and Life Sciences **6 cr.**

A. Applied Science 3 cr.

CSC	201	Introduction to Computers	3 cr.
CSC	202	Computers for Visual Arts	3 cr.
CSC	207	Navigating the Age of Artificial Intelligence	3 cr.
ENG	250	Robotics and Society	3 cr.
GIS	211	Principles of Geographical Information Sciences	3 cr.
MAT	203	Everyday Math	3 cr.
MIS	201	Management Information Systems	3 cr.

B. Life and Natural Sciences 3 cr.

AST	201	Discovering Astronomy	3 cr.
BIO	201	Your Body in Action	3 cr.
CHM	201	Chemistry in Everyday Life	3 cr.
ENS	201	Introduction to Environmental Science	3 cr.
ENS	203	Biodiversity	3 cr.
HEA	201	Health Awareness	3 cr.
HEA	204	Contemporary Health Issues	3 cr.
NTR	201	Basic Human Nutrition	3 cr.

Faculty-Dependent Exclusions

Some programs of professional nature involve 27 credits of LAC instead of 30 credits. The following exclusions indicate the pools to be waived for the corresponding Faculty/ Program(s) as well as additional restrictions mandated by licensing/accreditation requirements.

- FAAD, Architecture & Graphic Design Programs (27 credits):
  Category VI.A (3 credits) excluded.
- FBAE, All Programs (27 credits):
  Category V.B (3 credits) excluded.
- FE, All Programs (27 credits):
  Category VI.A (3 credits) excluded.
- FLPS, Law Program (12 credits):
  Categories III, IV, V, and **VI** (18 credits) excluded.
- FNAS, All Programs (27 credits):
  Category VI.B (3 credits) excluded for DS (Department of Sciences) programs and **Category VI.A** (3 credits) excluded for all other programs (Department of Computer Science, Department of Mathematics and Statistics, Department of Physics and Astronomy), except for the BS in Computer Science.
  For the Computer Science Program, **Category VI.A** and **Category VI.B** are modified as below, while 3 credits will be taken only from **Category V.A** or **Category V. B**.
  Category VI.A (3 cr.): CSC 201 or CSC 202 or GIS 211 or MAT 203 or MIS 201.
  Category VI.B (3 cr.): AST 201 or BIO 201 or CHM 201.
  Furthermore, the course AST 201 cannot be taken by students majoring in Physics.

- FNHS, All Programs (27 credits):
  Category VI.B (3 credits) excluded except for the BS in Nursing and the BS in Food Safety & Quality Management for which **Category VI.A** (3 credits) is excluded.
  For the BS in Nutrition and Dietetics, the 6 credits of **Category V** are to be selected from **Category V.B** only as per the Faculty Requirements.

**Excluded from the DHTM LAC courses

FRESHMAN PROGRAM

1. A student entering the Freshman Program at NDU is required to complete a minimum of 30 credits. He or she has to follow either the Arts or Science program.

2. The Freshman Arts Program includes courses from the following areas:

- Humanities and Social Sciences **9 cr.**
  (a minimum of 3 cr. in each area)
- Natural Sciences and Mathematics **6 cr.**
  (3 cr. in Natural Sciences)
- Electives **15 cr.**

3. The Freshman Science Program includes courses from the following areas:

- Humanities and Social Sciences **9 cr.**
  (a minimum of 3 cr. in each area)
- Natural Sciences and Mathematics **12 cr.**
  (a minimum of 6 cr. in Natural Sciences and a minimum of 3 cr. in Mathematics)
- Electives **9 cr.**

Freshman students cannot be considered sophomore students unless they have completed 30 cr. of Freshman courses successfully.

4. In exceptional cases, the Equivalency Committee in the Lebanese Ministry of Education and Higher Education will give permission to the Freshman student who misses one course or 4 credits from the Freshman requirements, to declare major and register in Sophomore courses, on the condition that he or she registers for the missing Freshman course and passes.

5. Freshman students cannot register in Sophomore courses without this prior authorization.

6. According to the regulations of the Lebanese Ministry of Education, the areas mentioned above include the following subjects:

- Humanities: Languages, Literature, Philosophy, History;
- Social Sciences: Psychology, Sociology, Anthropology, Economics, Geography, Business Administration, Management, Political Studies;
- Natural Sciences: Biology, Chemistry, Physics, Geology, Astronomy, Nutrition;
- Mathematics;
- Computer Science; and
- Arts: Art/Music/Drama (not to exceed 3 credits).

DEGREES OFFERED

Ramez G. Chagoury Faculty of Architecture, Arts and Design (RC-FAAD)	
Bachelor of Architecture	172 credits
Bachelor of Arts in Interior Design	136 credits
Bachelor of Arts in Graphic Design	102 credits
Bachelor of Arts in Fashion Design	102 credits
Bachelor of Arts in Photography*	102 credits
Bachelor of Music and Musicology - Musicology	99 credits
Bachelor of Music and Musicology - Arabic Musicology*	99 credits
Bachelor of Music and Musicology - Music Education*	99 credits
Bachelor of Music and Musicology - Musimedialogy*	99 credits
Bachelor of Music and Musicology - Jazz Music*	99 credits
Master of Arts in Design	36 credits
Master of Arts in Music*	36 credits
Masters of Arts in Urban Design*	30 credits
Masters of Arts in Sustainable Architecture	30 credits
Faculty of Business Administration and Economics (FBAE)	
Bachelor of Business Administration - Accounting	92 credits
Bachelor of Business Administration - Banking & Finance	92 credits
Bachelor of Business Administration - Financial Engineering	99 credits
Bachelor of Business Administration - Int'l Business Management	92 credits
Bachelor of Business Administration - Marketing	92 credits
Bachelor of Business Administration	
With the following emphasis:	
Entrepreneurship	92 credits
Bachelor of Science in Economics	90 credits
Bachelor of Business Administration - Distribution and Logistics Management	92 credits
Bachelor of Business Administration - Human Resources Management	92 credits
Bachelor of Business Administration - Management	92 credits
Bachelor of Hotel Management and Tourism	103 credits
With the following emphasis:	
Food & Beverage Management	103 credits
Hospitality Management	103 credits
Hospitality Events Management	103 credits
Master of Business Administration (MBA)	39 credits
Master of Science in Financial Risk Management	30 credits
Master of Science in Business Strategy	30 credits
Faculty of Engineering (FE)	
Bachelor of Engineering in Chemical Engineering	150 credits
Bachelor of Engineering in Civil Engineering	150 credits
Bachelor of Engineering in Computer and Communication Engineering	150 credits
Bachelor of Engineering in Electrical Engineering	150 credits
Bachelor of Engineering in Mechanical Engineering	150 credits
Bachelor of Engineering in Petroleum Engineering	150 credits

*Not offered at the present time

Master of Science in Civil Engineering	30 credits
Master of Science in Electrical and Computer Engineering	30 credits
Master of Science in Mechanical Engineering	30 credits

Faculty of Humanities (FH)

Bachelor of Arts in Education - Basic Education	99credits +TD = 120 credits
Bachelor of Arts in Communication Arts	
With the following emphasis:	
Radio/TV	103 credits
Journalism & Electronic Media	102 credits
Bachelor of Arts in Advertising & Marketing	102 credits
Bachelor of Arts in Psychology	97 credits
With the following emphasis:	
Clinical	97 credits
Educational	97 credits
Industrial	97 credits
Bachelor of Arts in English Language	102 credits
Bachelor of Arts in Translation & Interpretation	108 credits
With the following emphasis:	
Translation	108 credits
Interpretation	108 credits
Bachelor of Arts in Physical Education & Sport	99 credits +TD = 120 credits
Teaching Diploma in Arabic Language and Literature	21 credits
Teaching Diploma in Basic Education	21 credits
Teaching Diploma in Life Science	21 credits
Teaching Diploma in Chemistry	21 credits
Teaching Diploma in Computer Science	21 credits
Teaching Diploma in English	21 credits
Teaching Diploma in Mathematics	21 credits
Teaching Diploma in Physics	21 credits
Teaching Diploma in Physical Education	21 credits
Master of Arts in English Language & Literature	30 credits
With the following emphasis:	
Applied Linguistics and TEFL	30 credits
Literature	30 credits
Master of Arts in Translation	36 credits
With the following emphasis:	
Interpretation	36 credits
Translation	36 credits
Master of Arts in Media Studies - Advertising	36 credits
Master of Arts in Media Studies -Television Production and Management	36 credits
Master of Arts in Media Studies - Electronic Journalism	36 credits
Master of Arts in Media Studies - Media Data Analytics	36 credits
Master of Arts in Education	33 credits
With the following emphasis:	
Special Education	33 credits
School Management and Educational Leadership	33 credits
Educational Technology	33 credits
Master of Arts in Psychology - Educational Psychology	36 credits

Faculty of Law and Political Science (FLPS)

Bachelor of Law	140 credits
Bachelor of Arts in Political Science	105 credits
With the following emphasis:	
NGOs	105 credits
Bachelor of Arts in International Affairs & Diplomacy	105 credits
Bachelor of Arts in Public Administration*	105 credits
Master of Arts in Political Science	36 credits
With the following emphasis:	
NGOs	36 credits
Human Rights	36 credits
Master of Arts in International Affairs & Diplomacy	36 credits
With the following emphasis:	
International Law	36 credits
Master of Arts in Public Administration	36 credits

Faculty of Natural and Applied Sciences (FNAS)

Bachelor of Science in Computer Science	94 credits
Bachelor of Science in Computer Science - Information Technology	94 credits
Bachelor of Science in Computer Science - Computer Graphics and Animation	94 credits
Bachelor of Science in Actuarial Sciences	94 credits
Bachelor of Science in Mathematics	90 credits
Bachelor of Science in Biology	92 credits
Bachelor of Science in Environmental Science	92 credits
Bachelor of Science in Chemistry	92 credits
Bachelor of Science in Biochemistry	92 credits
Bachelor of Science in Business Computing*	94 credits
Bachelor of Science in Business Computing - Management Information Systems	94 credits
Bachelor of Science in Geographic Information Systems*	91 credits
Bachelor of Science in Physics	95 credits
Master of Science in Biology	36 credits
Master of Science in Computer Science	30 credits
Master of Science in Actuarial Sciences	30 credits
Master of Science in Mathematics	33 credits
Master of Science in Financial Mathematics*	33 credits
Master of Science in Industrial Chemistry*	36 credits
Master of Science in Astrophysics*	36 credits

Faculty of Nursing and Health Sciences (FNHS)

Bachelor of Science in Food Safety and Quality Management	93 credits
Bachelor of Science in Health Communication*	92 credits
Bachelor of Science in Medical Laboratory Technology	103 credits
Bachelor in Nursing	105 credits
Bachelor of Science in Nutrition and Dietetics	97 credits
Master of Science in Human Nutrition	35 credits
Master of Science in Food Safety and Quality Management	36 credits

*Not offered at the present time

OFFICE OF STUDENT AFFAIRS

OFFICE OF STUDENT AFFAIRS

The Office of Student Affairs (SAO) at Notre Dame University-Louaize (NDU) is a service-oriented unit. It provides several activities and services to complement the academic work of students and helps them fulfill their full potential. This Office creates healthy physical, social, personal, moral, and cultural environments to ensure that students can make the most of their university experience. The SAO aligns its practices with the University mission through its various Departments:

- Department of Financial Aid
- Department of Student Services
- Department of Counseling and Health
- Student Housing
- Department of Athletics
- Department of Student Activities
- Department of Community Service and Awareness
- Department of Academic Advising
- NDU Model United Nations (MUN)
- Student Union

For more information, kindly contact the Office of Student Affairs on 09-208000 Ext. 2047 or via e-mail: sao@ndu.edu.lb

DEPARTMENT OF FINANCIAL AID

OBJECTIVES

It is the philosophy of NDU that students should not be denied the opportunity to further their education because of limited financial resources. The Student Financial Aid Program was established to meet this goal by providing qualified students with financial aid regardless of ethnicity, gender, religion, nationality, or political affiliation.

NDU has created several types of financial aid programs to cater to the needs of new and current undergraduate students. The programs include:

For Current Students

WORK-STUDY GRANTS (WSG)

The Work-Study Grant (WSG) is a financial assistance for undergraduate students based on demonstrated need.
The WSG is designed to assist full-time students with proven financial need to cover part of the cost of their education. Students who are accepted for a WSG are required to complete a specific number of hours each semester and are assigned to various Departments or Offices in the University.
Placement is made based on capability, need, and job availability. Students will have to set a schedule for their working hours. The work schedule should not conflict with the class schedule of WSG recipients.
Students may receive up to 60% of his or her tuition fees through the WSG.
Students eligible for a WSG will have the added benefit of developing their working skills as well as gaining a deeper sense of personal responsibility and accomplishment.

Eligibility

To attain eligibility status, the student must:

- Demonstrate financial need;
- Be enrolled in a regular Undergraduate Program (Freshman students are not eligible);
- Be on good academic standing as per the University rules; and
- Be enrolled as a full-time student with a minimum of 12 credits each semester except the last semester before graduation when the number of credits may drop to 9.

Conditions

Any student who has been granted a WSG will be covered for a full academic year (excluding the Summer session) except in the following cases where the student:

- Does not maintain good academic standing;
- Registers for less than 12 credits during each semester and less than 9 credits during the last semester at NDU;
- Does not fulfill the job requirements assigned by the Department of Financial Aid;
- Does not abide by the rules and regulations of the assignment; and
- Reveals later that the information submitted is fallacious.

Procedures

Undergraduate students who apply will have to access Financial Aid on SIS, click on WSG application/renewal, and fill the application Online in the presence of one of their parents after securing all the required documents. All sections included in the application must be entirely completed. An appointment for an interview with the staff in the Department of Financial Aid must also be scheduled online. While making the appointment, applicants are advised that the interview may last up to 45 minutes. Students must attend the interview in person and submit the printed application signed by one of their parents, along with all the required documents. Applications with missing documents are incomplete and will not be considered. Every semester, dates and deadlines for applications will be updated and posted on the NDU website and scheduled in the academic year calendar.
All WSG applications must be submitted one semester in advance (for a Fall semester WSG, the application must be received by the Department of Financial Aid during the previous Spring semester).
WSG applications must be renewed for every academic year before the official deadline of submission of application by filling a 'Renewal Form' online.
Students applying for the WSG may receive a home visit from representatives of the Department of Financial Aid. After the procedure is completed, the Financial Aid Committee will review each application carefully and give the appropriate decision. Applications that have missing documents will be considered incomplete and hence will not be studied.

For more information about the WSG, you may send an email, call, or visit the Department of Financial Aid.

Student Employment

Full-time students proving to have special skills may be employed for academic reasons for the duration of one semester upon the request of Faculty Deans. The Financial Aid Committee will determine the working hours and the hourly rate.

GRANTS

a. Sports Grant

When eligible, the student joining a sports team at NDU will benefit from a 10% Sports Grant. An additional 5% will be granted to the team that wins a tournament or a championship.
An NDU athlete, member of first division sports team, or a member of the national team will be granted 20% of tuition.
The Sports Grant can be combined with other types of Financial Aid or Scholarship. Elite players can also join NDU through the Sports Scouting Scholarship and receive a 50% scholarship on their tuition.

b. Sibling Grant

NDU provides a family discount when two or more siblings are enrolled simultaneously. Students can benefit from the Sibling Grant starting their first semester.

Eligibility
To attain eligibility status, the student must:
- Be enrolled as a full-time student with a minimum of 12 credits except the last semester before graduation when the number of credits may drop to 9 credits;
- Be on good academic standing as per the University rules; and
- Be enrolled in a regular Undergraduate Program.

If one of the siblings does not fulfill the above criteria, the other(s) may benefit if his or her sibling is enrolled in 9 credits minimum for the undergraduate students and in 6 credits minimum for the graduate students.

Conditions
1- If eligible, two siblings enrolled at the same time in the University will benefit from a 15% discount each; three or more siblings will be entitled to a 25% discount each. Student enrolled in the English intensive course will benefit from a 10% discount if enrolled in a minimum of 12 credits.

2- In the case of financial need, eligible siblings will have the possibility to raise the percentage given to a maximum of 40% by applying to the WSG during the dates scheduled in the academic calendar.

3- A Sibling Grant's candidate who receives:
20% scholarship will benefit from 15% Sibling Grant;
40% scholarship will benefit from 10% Sibling Grant; and
60% scholarship will no longer benefit from sibling grant.

Procedure
Students must:
- Access Financial Aid on the SIS, click on Sibling Grant and add the ID number of his/her sibling.
- Submit a copy of the Family Status Record (not older than one year) at the Department of Financial Aid.
- The deadline to submit the Family Status Record is the fifth working day after his/her on-line application date.

Dates and deadlines are posted on the website and scheduled in the academic calendar.

Siblings will benefit from the discount as long as they are eligible. They do not have to renew their application unless a new sibling is enrolled for the first time with them.

UNDERGRADUATE SCHOLARSHIP

The Undergraduate Scholarship is awarded to students with high academic standing and according to the following scale:

Cumulative GPA from 3.40/4.00 to 3.65/4.00 ---------- 20% Scholarship
Cumulative GPA from 3.66/4.00 to 3.79/4.00 ---------- 40% Scholarship
Cumulative GPA from 3.80/4.00 to 4.00/4.00 ---------- 60% Scholarship

Eligibility
To attain eligibility status, the student must:
- Have completed 12 credits at NDU (remedial credits are not included);
- Have completed in the previous semester at least 9 credits with letter grades (excluding U and UW)
- Be enrolled in 12 credits each semester except during the last semester before graduation when the number of credits may drop to 9; and
- Have demonstrated academic excellence by maintaining a high cumulative GPA (3.40/4.00 and above).

Procedure
If a student meets the above criteria, he or she does not have to apply and will automatically benefit from the discount on tuition fees. The scholarship amount will be automatically calculated and will appear on his or her SIS payment details.

The Undergraduate Scholarship is granted as long as the cumulative GPA of the student is above 3.4 and provided the credit eligibility is maintained.

In the case of financial need, the student can have the possibility to increase the percentage already provided to a maximum of 70% by applying to the WSG during the dates scheduled in in the Academic Calendar.

For New Students

FINANCIAL AID UPON ADMISSION

This program offers Financial Aid to students starting their first semester at NDU. Students eligible to receive this form of Financial Aid must prove they have a financial need and should have good academic records during their final three years at school. The percentage of the Financial Aid offered upon admission may reach up to 40%. The amount of aid granted will cover two consecutive semesters, excluding the Summer session. Once accepted in this Financial Aid program, the student will have to complete an assigned number of working hours.

Procedure
A new student who wishes to apply for "Financial Aid Upon Admission" must fill an Online Financial Aid Application. He can find the application on the "Online Acceptance Results" (OAR). The username and password to enter this page will be provided by the Office of Admissions when the student submits his complete file (application and documents).

The student will have to access OAR on https://sis.ndu.edu.lb/OAR/, click on Financial Aid & Scholarship Upon Admission and:

- Fill the Financial Aid application Online in the presence of one of his/her parents. All sections included in the application must be entirely completed.
- Schedule an appointment Online for an interview with the staff in the Department of Financial Aid keeping in mind that the interview can last up to one hour. **The presence of one of the students' parents is mandatory durin the interview.**
- Print the application, put his/her signature and his/her parent's signature then secure all the required documents. Applications with missing documents will be considered incomplete and thus will not be studied.
- Submit the application with all required documents in person during the interview scheduled with the staff in the Department of Financial Aid.

Dates and deadlines for Financial Aid upon Admission are updated and posted on the University website, and social media platforms and included in the academic calendar.
New students should submit their applications and supporting documents by the appropriate deadline, as per the application schedule table.
All parts of the financial aid application must be completed. Questions in any part that are not answered and completed properly will jeopardize application processing. Only complete applications, including all required documents, will be processed.
Applicants are strongly urged not to wait until the last minute since filling the application and preparing all the required documents may take time. A delay in the application may negatively impact the amount and nature of the applicant's aid.
The results will be issued before the registration period.

Eligibility

To attain eligibility status, the student must:

- Be a sophomore student;
- Register on a full-time basis (a minimum of 12 credits);
- Prove that he or she does not benefit from any other form of financial assistance; and
- Be on good academic standing.

In the case where the student fulfills 12 credits, excluding remedial, with a GPA of 3.4 and above during the first semester, he or she becomes eligible for the Undergraduate Scholarship. The highest percentage of the financial support is always adopted.

Conditions to Maintain Financial Aid for the Next Academic Year

- The student should register on a full-time basis;
- The student should have completed 12 credits excluding remedial courses;
- The student should be on good academic standing; and
- The student should renew his application for the WSG at the Department of Financial Aid during the second semester.

Scholarships Upon Admission

NDU consistently strives to attract new students with strong academic backgrounds. NDU recognizes the need for scholarship funds for high school students interested in pursuing their academic study.

a- Official Baccalaureate Scholarship

This scholarship is awarded to newly-admitted students in the first year covering 40% or 60% of the tuition fees based on the student's Lebanese, French, or Technical Baccalaureate exam results. The scholarship may be renewed in subsequent semesters based on the required cumulative GPA.

Eligibility

- The new student should obtain 14/20 score on their Lebanese, French or Technical Baccalaureate exam (40%); or
- The new student should obtain 16/20 score on their Lebanese, French or Technical Baccalaureate exam (60%).

Procedure

- No Application is required;
- Automatically awarded to eligible students;
- The Department of Financial Aid compiles the list to be approved by the Vice President for Administration and Finance (VPAF);
- The new student receives a Scholarship Letter from the Office of Admissions of the awarded percentage once he or she submits the Lebanese, French or Technical Baccalaureate certificate maximum one week before the second payment; and
- The applicant will not be eligible for scholarship if the Lebanese, French or Technical Baccalaureate certificate is not submitted on time.

Starting the second academic year, the following Academic Scholarship conditions will apply:

- The student should have completed 12 credits, excluding remedial courses;
- The student should register on a full-time basis (a minimum of 12 credits); and
- The student maintains a Cumulative GPA of 3.8 (60%), 3.66 (40%) and 3.4 (20%).

b- SAT Scholarship

This scholarship is awarded to newly admitted students in the first semester and covers 20% or 40% of the tuition fees based on their SAT score results.

Eligibility

- New students will receive 20% for obtaining a score of 1200 on SAT and 40% when obtaining a score of 1300 on SAT.

Procedure

- No Application is required;
- Automatically awarded to eligible students;
- The Department of Financial Aid compiles the list to be approved by the Vice President for Administration and Finance (VPAF); and
- The new student receives from the Office of Admissions a Scholarship Letter of the awarded percentage once he or she submits the SAT exams results Starting the second semester, the conditions of the Academic Scholarship will apply as below:

- The student should register on a full-time basis;
- The student should maintain a Cumulative GPA of 3.8 (60%), 3.66 (40%) and 3.4 (20%); and
- The student should have completed 12 credits excluding remedial courses.

NB: A new student can only benefit from the financial support plan with the highest percentage.

When receiving any type of Financial Aid, Grant and/or Scholarship during a semester, the student will have to cover the remaining amount of his/her tuition after the deduction of the financial support in order to benefit from the same in the following semester if he/she qualifies.

RE-ENROLLMENT POLICY

Students, who re-enroll, for any reason, in any course, shall not benefit from any financial support for the re-enrolled courses.

Due to the unstable economic situation, the Financial Aid, Grant and Scholarship percentages may be subject to changes.

For more information, kindly contact the Department of Financial Aid on 09-208000 Ext. 2052, 2051, 2053, 2182, or 2199 or via email financialaid@ndu.edu.lb

DEPARTMENT OF STUDENT SERVICES

The Department of Student Services (DSS) aims to support and guide students in their academic journey and registration process. It ensures that students comply with NDU academic rules and regulations in terms of absences and with the National Social Security Fund (NSSF) procedures and laws.

ATTENDANCE

Students facing attendance problems are investigated closely and accurately by the Office of Student Affairs (SAO) under the Dean of Students' supervision.

The Attendance Policy at NDU

- Students should attend all classes and laboratory sessions on time.
- Absences, whether authorized or not, even if below the maximum number (specified below), may alter one's grade substantially.
- The SAO alone validates absences.
- No absence absolves a student from responsibility regarding the material presented during his or her absence.
- The maximum number of absences permitted in classes that meet on MWF days is 6 and on TTH days, and in the summer session, is 4. Any student whose absences exceed the maximum limit shall automatically be considered as having failed the course unless the student withdraws.

N.B.: Students who miss classes (or evaluations) for medical reasons should contact the University physician within 48 hours of their sickness. Those who miss classes (or evaluations) for non-medical reasons should visit the Office of Student Affairs (SAO) with sufficient evidence to justify the absence and secure an excuse.

International Student Services

The International Student Services program provides support for international students at NDU. It helps them to integrate within the NDU community and build relationships with other students. International students are urged to visit the SAO upon arrival and on a regular basis.

For more information, kindly contact 09-208000 Ext. 2045 or via email studentlife@ndu.edu.lb

NATIONAL SOCIAL SECURITY FUND (NSSF) CLEARANCE

The paid NSSF membership is mandatory by law for all Lebanese students. Therefore, all students must come in person for the NSSF declaration every academic year.

Returning and New Students

- Students who are freshman, non-Lebanese and/or who are above 30 do not have to submit any document related to NSSF.

- Students who benefit from one of the following must submit in person the original statement **(إفادة من مركز التبعية الرسمي)** which certifies their benefit from the local office they (or their parents) belong to, along with a copy of the Family Status Record not older than one year or copy of Identity Card **(صورة عن إخراج القيد العائلي أو الهوية)**

1. The Social Security **(الضمان الإجتماعي)**
2. Cooperation **(تعاونية)**
3. The Army **(الجيش)**
4. Municipality **(بلدية)**
5. The Lebanese University **(الجامعة اللبنانية)**
6. The Mutual Fund for Judges **(صندوق تعاضد القضاة)**

- Students who do not benefit or have stopped benefiting from NSSF must fill out Form A1 and attach a copy of the Family Status Record not older than one year or a copy of Identity Card.

- Transferred students must submit their NSSF number; and if not available, they must fill out Form C attach the receipts (per academic year) or administrative statement in Arabic from the former university, and a copy of their Family Status Record not older than one year or a copy of the Identity Card.

N.B.: Failing to do so before the deadline, students will not be able to register.

For more information, kindly contact 09-208000 Ext. 2114 or via email nssf@ndu.edu.lb

DEPARTMENT OF COUNSELING AND HEALTH

COUNSELING SERVICES

The University Counseling Services team provides students with short-term counselling and crisis intervention services. Anxiety, depression, behavioral troubles, conflicts, communication problems, phobias, and other ailments are treated with professionalism, absolute respect, and extreme confidentiality.

Counselling services are at the disposal of all enrolled students who need them and free of charge.

MEDICAL HOUSE

NDU provides all its students with a variety of health services and primary care visits at the NDU Medical House (MH) located at the SAO building.

- Completing and submitting the Student Medical Record (SMR) form is mandatory for all new students before registration period. NDU physician shall follow up on students with abnormal results of the health assessment and on vaccination.

- All new students shall be screened for positive TST (Tuberculine Skin Test) during pre-registration period. The nurse at NDU administers the TST screening at the MH. Dates of such are posted on the website and communicated through SMS. Two days after taking the TST, the new student comes to the MH for TST reading. Positive results require further investigations and an NDU physician's appointment for follow up.

- The medical fee must be paid in advance at Byblos Bank or Bank of Beirut. This fee allows students to benefit from all medical services provided by the MH staff. Any student who is readmitted to NDU after 2 semesters of absentia will have to undergo the same medical procedures listed above.

- NDU reserves the right to request random medical tests from any student to test for drug use or for any other medical reason.

- The university physician is available daily, at the MH and is on call for assistance and free consultations 24/7.

- The university nurse is available daily from 8:00 a.m. to 4:00 p.m. The Emergency Medical Assistants will be available on Campus after 4:00 p.m. to assist in case of emergency.

- Serious cases are referred to the nearest hospital.

- All students with medical ailments must contact the NDU physician for examination within 48 hours of their sickness/injury. Medical excuses will not be recognized by the Faculties unless they are validated by the NDU physician.

INSURANCE POLICY

NDU students who are injured when practicing any kind of activity within or outside University premises are insured by the University. Students should visit the MH during regular working hours to fill out the appropriate form.
If the accident occurs outside working hours, students should visit the MH at a later date to complete the procedure.
The insurance coverage is an addition to the NSSF coverage.

For more information, please contact the Medical House on
09-208000 Ext. 2253, 2269, 2049 or via email medicalhouse@ndu.edu.lb or visit the MH.

STUDENT HOUSING

The Student Housing facility provided by NDU is a student service dormitory located on campus.

NDU Student Housing provides and promotes a living environment that is conducive to learning and encourages residents to use all available housing resources. The Student Housing facility offers a safe, well-maintained, and reasonably priced residence for NDU students. Students can benefit from a host of services such as laundry, equipped kitchen, TV room, study room, and Internet access. A front desk clerk is always on duty to provide assistance. A nurse is on call every night in case of emergency.

The NDU dormitory complex is comprised of two segregated wings, female and male, which can accommodate more than 400 students on campus.

Reservations
Applications for on-campus housing are made through the Student Housing Office, Office of Student Affairs. Students and their parents/guardians are asked to pass by the Student Housing Office, to learn about dorm rules and regulations and visit the housing facility.
For more information, kindly contact Student Housing on
09-208000 Ext. 2982 or via email studenthousing@ndu.edu.lb

DEPARTMENT OF ATHLETICS

The Department of Athletics (DA) at NDU encourages a healthy and active lifestyle through the provision of sports, activities and gym facilities. Students may choose from a wide variety of sports activities, including Basketball, Volleyball, Futsal, Football, Rugby, Tennis, Table Tennis, Badminton, Swimming, Chess, Taekwondo etc.

Students can have access to NDU Basketball and Tennis outdoor courts.

A multipurpose gym for bodybuilding and fitness, Zumba and aerobic fitness classes, martial arts classes such as Aikido and Taekwondo, and dancing is available for use by the NDU community at large.

Sports Grant
Join any of the sports activities, show professional sport ability and dedication, and you may receive a grant fixed at 10% of your tuition, which can also be added on any other grant you are already benefitting from. First division or national team players will have 20% sports grant on their tuition. An additional 5% will be granted to the team who wins a tournament or a championship.

Elite players can also join NDU through the Sports Scouting Scholarship and receive a 50% scholarship on their tuition.

For more information, kindly contact the Department of Athletics on
09-208000 Ext. 2067, 2069 or via email athletics@ndu.edu.lb

DEPARTMENT OF STUDENTS ACTIVITIES

With more than 20 clubs and societies at NDU, University life has something for everyone! The Department of Student Activities (DSA) assists students and clubs in preparing and organizing activities and events. Become an active member of any club or society to experience leadership, teamwork, success, and excitement through extracurricular activities at NDU.

For more information, kindly contact the Department of Student Activities on
09-208000 Ext. 2348 or via email studentactivities@ndu.edu.lb

DEPARTMENT OF COMMUNITY SERVICE AND AWARENESS

VISION
The Department of Community Service and Awareness (CSA) vision is to establish Notre Dame University-Louaize (NDU) as a leading institution providing a nurturing and dynamic environment for students dedicated to fostering positive societal changes within their communities and beyond.

MISSION
The CSA is committed to fostering a culture of civic engagement, capacity building, awareness, and community service among students, faculty, and staff. The aim is to empower students to become informed and proactive citizens, advocating for social justice, equality, and sustainable development.

FOUNDATIONAL PILLARS
The CSA is built upon the foundational pillar of promoting social responsibility and civic engagement among its members and the wider public. Various initiatives are organized and supported to address the needs and challenges, aligned with the Sustainable Development Goals (SDGs), of diverse communities, including environmental conservation, health education, cultural diversity, and human rights. Moreover, a culture of learning and collaboration is fostered among staff, volunteers, and partners by offering training, mentorship, and networking opportunities.

1. Civic Engagement
Believing in the significance of active citizenship and encouraging individuals to engage in civic activities and decision-making processes. Empowering the community members to tackle social, political, and environmental issues at local, national, and global levels.

2. Charity
Committed to fostering a culture of compassion and generosity within the community. Initiatives aim to support those in need through various charitable activities, promoting empathy, and positive change. Opportunities are provided for individuals to contribute to meaningful causes, encouraging a spirit of giving and social responsibility.

3. Capacity Building
Dedicated to equipping students with the necessary skills, knowledge, and resources to effectively address societal challenges. Avenues for personal and professional growth are provided, nurturing a sense of responsibility, leadership, and innovation.

4. Awareness
Striving to raise awareness about critical social issues, fostering empathy, understanding, and dialogue. Through educational programs, workshops, and events, the aim is to educate and motivate students to critically assess and confront societal challenges.

5. Community Service:
Recognizing the importance of actively contributing to the community. The department facilitates and champions volunteerism and community service initiatives aimed at addressing identified needs and making a positive impact on the lives of others.

For more information, please contact the Department of Community Service and Awareness at 09 208 000 ext. 2068, 2043 or via email at csa@ndu.edu.lb.

DEPARTMENT OF ACADEMIC ADVISING (DAA)

The Department of Academic Advising (DAA) aims at developing a process that considers NDU students' academic needs, goals, interests, and educational path. Consequently, the DAA promotes student success by assisting students at risk or in need of additional resources by helping them make informed decisions concerning their educational goals.

For this reason, the DAA has designed programs for students who need special care and continuous attention in order to pass their courses smoothly and successfully. The DAA provides the following services on an individual basis.

- The Follow Up service offers individual support and help to students facing special conditions that affect their academic performance due to social, health, mental or family situations and need ongoing personalized attention from our part. They are either referred to the DAA by an instructor, faculty, unit, or parents, or contacted by the DAA when they are placed on academic probation or suspension. The follow up is done in one-on-one meetings and personal issues discussed are dealt with high confidentiality.

- The Learning Accommodation Services (LAS), under the supervision of Smart Kids with Individual Learning Differences (SKILD) center offers services for students with special needs. Those needs may include but not limited to learning difficulties, psychological disorder, medical condition, or physical impairment. The purpose of the LAS is to facilitate learning accommodations for students with special needs, while ensuring the integrity of the course requirements.

Services are decided depending on the student's needs after submitting a medical or assessment report and meeting with SKILD professionals. Students must inform the LAS of courses registered each semester in order to ensure they get the help and accommodations they need.

To register for the LAS, students should send an email to schedule an appointment with LAS staff las@ndu.edu.lb or pass by the LAS in the SAO.

- The tutoring services help students who are not able to pass certain courses to overcome their academic difficulties. The DAA coordinates with their fellow students who have attained relevant high scores to offer the needed number of private lessons on an individual basis. This step is completed in coordination with peer volunteers with high academic standing, and the Work Study Grant program at the Department of Financial Aid.

For more information, kindly contact the DAA on
09-208000 Ext. 5485 or 2144 or via email academic.advising@ndu.edu.lb

NDU MODEL UNITED NATIONS (MUN)

The MUN, an academic replication of the United Nations, is a student-led chapter, which aims to permit students to diplomatically resolve issues at the forefront of international relations. Its purpose is to model the best practices of collaboration, cooperation, and constructive debate. It educates participants about current events and topics in addition to assisting in creating new leaders and diplomats seeking to change the world.

For more information, kindly contact the MUN Office on
09-208000 Ext. 2048 or
via email mun@ndu.edu.lb

STUDENT UNION

The Student Union (SU) is the official representative body of the NDU student population. Elections for choosing the SU members are held in the Fall semester of every academic year and are organized by the Office of Student Affairs in all three campuses. The SU's main mission is to promote student interests, needs, and welfare within the University.
It helps to create a healthy atmosphere for students to express themselves in accordance with the rules, regulations, policies, and by-laws of NDU.

For more information, kindly contact the Student Union representative on
studentunion@ndu.edu.lb

RAMEZ G. CHAGHOURY FACULTY OF ARCHITECTURE, ARTS AND DESIGN SUPPORT FACILITIES

FAAD studios are designed to meet the various needs of the Architecture, Arts and Design programs. The studios are furnished with professional drafting tables and are appropriately equipped to provide support to all Architecture, Design and Fine Art courses.

MAC COMPUTER LABORATORY

Graphic Design and Fashion Design students have access to the up-to-date Mac Computer Laboratory and the latest software to facilitate their performance.

PHOTOGRAPHY LABORATORY

The Photography Laboratory is where Architecture, Design, and Art students, as well as other disciplines at NDU, learn how to capture still images, develop, print, and experiment with the techniques of digital and analog photography. The studios are professionally designed and equipped with the latest technology in addition to darkrooms for analog prints to provide hands-on learning experience and optimal working conditions under the supervision of qualified instructors.

DOROTHY SALHAB KAZEMI - CERAMIC WORKSHOP

This Ceramic Atelier is equipped with two kilns and several wheel tables. Student can enjoy manual work with clay (slab, coil building, throwing, etc.), and clay enamels powder glazing. The Ceramic Atelier has a terrace, overlooking pine trees.

METAL AND WOOD WORKSHOP

The Metal and Wood Workshop has the necessary tools to help Architecture, Interior Design, Graphic Design, and Fashion Design students in the creative process of their works. Its main purpose is to bridge the methodologies of teaching between theory and practice.

SILK SCREEN PRINTING WORKSHOP

The Silk Screen Printing Workshop is equipped with the necessary tools to help mainly Graphic Design students in the hands-on application of their work. It aims to provide a tangible dimension to the theoretical methods of teaching. A movable-types printing facility is also available in the same workshop.

SMART ROOMS

Within FAAD premises, 23 classrooms are equipped with Active Boards Touch, and 12 others have LCD projectors.

ARCHITECTURE COMPUTER WORKSHOP

Two Computer Workshops have been set up for the Architecture and Interior Design Students, located within the Architecture studios. Both workshops are equipped with

facilities, including 15 computers, an LCD projector, and related projection screen. Each computer contains the latest versions of graphic software.

DESIGN COMPUTER WORKSHOP

Two fully equipped computer workshops have been developed in proximity to the studios for Graphic Design and Fashion design students, including 19 G4 Macintosh computers with the latest graphic software.

FASHION DESIGN STUDIO

The Fashion Design facilities comprise three studios: a mannequin room with large pattern making tables, a sewing studio with professional steam iron and sewing machines, and a Macintosh computer workshop set up to ensure a professional studio setting of digital illustration and patter making skills and hands-on execution. Students also have access to a catwalk installation to host fashion shows to display their designs.

MUSIC DEPARTMENT FACILITIES

The Music Department facility consists of three repetition halls equipped with projection tools and a piano, in addition to 6 small practice rooms for one-to-one music instrumentation practice. The halls and rooms are all acoustically isolated and outfitted with up-to-date sound systems.

FACULTY OF HUMANITIES ACADEMIC SUPPORT FACILITIES

WRITING CENTER

Hosted by the FH, the NDU Writing Center helps improve students' competencies and skills in English. The Center is open to all students and is staffed with experienced instructors from the Department of English and Translation. The Center offers workshops on topics ranging from effective writing techniques and time management to tips on avoiding plagiarism.

Students benefit from the Writing Center by scheduling a 30-minute appointment with an instructor to discuss a written assignment. Open daily, students can drop by in person or request an appointment by contacting the Center.

THE INTERPRETATION LABORATORY

The Interpretation Laboratory at the FH serves students specializing in interpreting within the program of Translation. Refurbished in 2017, the lab is equipped with state-of-the-art equipment and interpretation booths for continuous student practice and simulation. Students listen, interpret, and record their voices using digital software for further instructor-provided feedback and analysis.

PSYCHOLOGY LAB

Established in 2017, the Psychology Lab provides hands-on applications for psychology students in psychometrics using internationally validated inventories and personality measurement tools. The Lab conducts empirical studies in psychology, involving students and faculty members in joint collaborative research.

NEWS ROOM

The News Room is located in the FH Building FH -2.19.
It is the main operational room. It is currently equipped with a smartboard and a projector against which any type of visual material can be shown. It also contains four large TV screens to allow students access to local and international news and programs.
Ten Apple i-Macs occupy the center of the room, permitting students access to the World Wide Web as well as all types of social media platforms. The computers are also equipped with editing programs: Adobe Premiere and Final Cut. The lighting setup in the room has Led and Cool Lights and a Chroma green screen to allow shooting any virtual background for the news.

Projection Room FH -2.17.
It is a state-of-the-art, fully-equipped projection room (projector, audio, microphones, board, and stage lighting) is used for lectures and conferences, film screenings, and small acting performances and exercises.

FACULTY OF ENGINEERING LABORATORIES

Engineering programs are supported by state-of-the-art laboratories serving the community at NDU and beyond. These laboratories and workshops are managed by qualified and dedicated staff and laboratory instructors. The entire system is continuously updated to reflect the latest trends in testing facilities and to comply with international standards in the field of accredited engineering education. The main objective is to expose future engineers to up-to-date practices and boost their practical skills to prepare them to enter a high-technology-oriented job market.

The Department of Civil and Environmental Engineering offers various laboratory courses to cover the main topics in the fields of concrete and pavement design, environmental engineering, mechanics of materials, soil mechanics, hydraulics, field surveying, transportation, geophysical and engineering graphics. The department also secures highly accurate and professional testing facilities, such as spectrophotometry, strain gauging, triaxial testing, open-channel and closed-channel flow measurements, and total station applications. In addition, field equipment is available for in-situ testing, such as soil investigation, groundwater and surface water testing, and concrete quality control. Professional commercial testing as well as community service are also performed on a regular basis in the above areas.

The Department of Electrical, Computer and Communication Engineering has several laboratories, which support teaching in the areas of communication systems, electronic circuit design, microprocessors and programmable logic controllers, instrumentation, electric machines, power electronics, control systems, and digital signal processing. The laboratories are also used by students for executing their engineering project designs and some units are being used for industrial testing purposes, such as an advanced anechoic chamber with its associated accessories.

State-of-the-art laboratory equipment is used in the Department of Mechanical Engineering for training purposes. The list includes a large wind tunnel for aerodynamics testing with a full PIV system, energy testing facilities (solar systems, combustion, etc.), turbomachinery testing systems (pumps, fans, Pelton wheel, turbines, etc.), air conditioning testing units (heating, cooling, refrigeration, etc.) with a climatic chamber, engine testing facilities, including a professional dynamometer, industrial robotic manipulator, mechatronics and instrumentation equipment, mechanical vibration benches, and mechanical components and systems. A full workshop involving a set of machine-tools, including CNC machines, is used for student training and regular machining needs.

Up-to-date facilities related to the new majors offered by the Faculty - Chemical and Petroleum Engineering - are being added as needed. The list already includes various equipment related to separation processes (distillation, rectification, adsorption), process control equipment, different types of reactors (tubular, batch, CSTR) that can be used for academic as well as for research purposes.

The engineering laboratories are complemented with state-of-the-art software used for training as well as for design purposes as required by the professional engineering market.

Advanced research-oriented laboratory facilities are being added on a regular basis to support the new graduate programs offered by the Faculty. Computational facilities are also on the list and various systems are being used to conduct high-level research in cooperation with international partners from both academia and industry.

FACULTY OF NATURAL AND APPLIED SCIENCES LABORATORIES

BIOLOGY LAB

The Biology Laboratory is equipped with many facilities, which support teaching and research across the biology curriculum. Disciplines supported include:

- Microbiology: Culture and analysis of viral, bacterial and parasitic species;
- Molecular Biology: DNA purification, analysis, and manipulation, with PCR facilities for DNA amplification. Other available equipment such as an electroporator, promote research studies that require electrotransformation or transfection of cells;
- Cell Culture: Preparation, culture and cryopreservation of animal cells;
- Plant Biology: Plant cell culture and analysis; and
- Histology: Histological assessment and histopathological examination of tissue samples.

Available equipment include microscopes (including a confocal laser scanning microscope) and photomicrographic systems, biological safety cabinets, incubators, liquid nitrogen containers, diurnal growth chamber, autoclave, centrifuges, ovens, microtome, paraffin histoembedder, electrophoresis and blotting apparatus, thermal cycler (RT-PCR), flowcytometer, ELISA reader, chemidoc imaging system, and Rodent tail cuff blood pressure system, chromatography systems, in addition to an animal house, green house, and herbarium facilities.

CHEMISTRY LAB

The Chemistry Laboratory provides a wide variety of facilities to support chemistry students and faculty members' research and teaching. Students are introduced to the fundamental quantitative, organic/inorganic, and food analysis experimental methods through experiments in:

- Chromatographic analysis of alcohol content in beverages;
- Heavy metals analysis using AAS;
- Determination of nutrients, vitamins, and minerals in foods;
- Properties of enzymes;
- Browning reactions in foods;
- Spectrophotometric determination of analytes in different sample types;
- Size and Zeta Potential determination of nanocolloidal, polymer and protein samples;
- Water analysis; and
- Precipitation and complexation titrations.

In addition, an analytical unit houses a number of modern equipment such as UHPLC, GC/GCMS, FTIR, AA, Zetasizer Nano ZSP, gas chromatograph, capillary electrophoresis, UV-visible spectrophotometers, microwave digestion, freeze dryer, digestion-distillation unit for nitrogen determination, solvent extraction apparatus, digital densimeter, electronic refractometer, pH meters, ion-selective electrodes, etc.

GEOLOGY LAB

Geology Laboratory courses are held in the Sciences Lab building and are supported by a varied collection of rock-forming minerals, including silicates, carbonates, sulfates, fluorides, and oxides as well as a core collection of igneous, sedimentary, and metamorphic rocks.

Additional teaching support of sample specimens is provided by the Stone Wing Museum, which houses a rich collection of minerals and archaeological items from Lebanon.

PHYSICS LAB

The Physics Laboratory is a state-of-the-art teaching laboratory offering computer controlled data acquisition and analysis as well as interesting experiments covering a wide range of topics in physics. Experimental work goes hand in hand with the theoretical physics courses at NDU. The lab is well equipped to allow students to perform experiments that will help them understand the physical phenomena covered in the classroom. In many cases, the experiments follow the lecture courses closely leading to a better understanding of the physics.

MOUSSA AND FARID RAPHAEL OBSERVATORY

NDU has an on-campus observatory that contains a 60-cm telescope equipped with a set of research-grade equipment, consisting of CCD cameras, filters, and spectrograph. It is the most hi-tech observatory in the Arab world, and its telescope is the largest in the Arab Middle East. His Excellency Ambassador Gilbert Chaghoury made the observatory possible through his generous donation to the University.

METEOROLOGICAL STATION

The Department of Sciences houses a meteorological station supported by the Lebanese Agricultural Research Institute (LARI) that provides climatic data for the Keserwan area.

TUTORING CENTER

The Tutoring Center helps students in remedial, freshman, and sophomore in math, biology, physics, and computer science.

OFFICE OF INFORMATION TECHNOLOGY

Our campus is equipped with a comprehensive range of hardware and software resources, ensuring a seamless technological experience.

Faculty members can access advanced workstations, high-speed internet connectivity, and specialized software tailored to their respective fields. Our dedicated IT support team is always available to assist with any technical needs or concerns. For students, we offer well-equipped smart classrooms and computer labs equipped with the latest hardware, including powerful desktops, and peripherals for a productive learning environment.

Additionally, students have access to a wide array of software applications necessary for their coursework and research. We continuously strive to upgrade our computer equipment and software, enabling our university community to excel in their academic pursuits and stay at the forefront of technological advancements.

DIVISION OF AUDIO VISUAL ARTS (DAVA)

The Division of Audio-Visual Arts (DAVA) at NDU oversees the academic and technical aspects of video and audio projects for students majoring in Communication Arts, Audiovisual Arts/Film, Advertising and Marketing, Journalism, and Musicology. Established to provide crucial support for students executing their projects, DAVA collaborates closely with academic instructors and industry professionals.
DAVA is home to advanced facilities, notably the Antoine Choueiri Radio & TV studios, which include a TV studio, acting studio, editing suites, sound studio, projection room, and computer labs. Additionally, DAVA accommodates a newsroom and manages the recording activities of the NDU Choir through a dedicated unit.
All DAVA facilities are fully equipped and accessible to faculty, staff, and students.
In addition to these resources, DAVA features Smart Rooms equipped with computer hardware and software, TV screens, DVD and data players, and surround sound systems for film screenings.

Furthermore, the Antoine Choueiri studios house a DVD Library containing over 1,500 DVDs encompassing films, documentaries, series, and more. Access to this extensive collection is available to all members of the NDU community.

SMART ROOMS

The DAVA has four Smart Rooms fully equipped with computer hardware and software, an LCD projector, DVD and Data players, and surround sound systems for film screenings.

DVD LIBRARY

Located in the Antoine Choueiri studios, the DVD Library includes more than 1,500 DVDs (films, documentaries, series, and others). All members of the NDU community may be given access to these films.

LIFELONG LEARNING CENTER (LLC)

In today's rapidly changing word, lifelong learning is a must to cope with the change and maintain a competitive advantage. Due to innovations across industries, the way we do things is different every day, and some practices are becoming obsolete. Lifelong learning programs exist to re-equip executives, entrepreneurs, officers, and professionals with new skills to thrive in today's highly competitive, volatile, and complex world.
NDU Lifelong Learning Center (LLC) provides various world-class programs, courses, and workshops for participants to learn from a network of industry leaders and practitioners and join the LLC group of change makers.

MISSION

The Notre Dame University-Louaize Lifelong Learning Center (NDU-LLC) fosters on-going interactive learning that develops participants' knowledge, skills, and competencies instrumental to advancing their careers.
NDU Lifelong Learning Center is a "life-changing experience." Participants will not only build their expertise, but they will also enjoy the journey of improvement on the personal and professional levels and explore the unlimited potential to grow and make a long-lasting impact.

LLC VALUE

NDU Lifelong Learning Center is a "life-changing experience." Participants will not only build their expertise, but they 'll also enjoy the journey of improvement on the personal and professional levels and explore the unlimited potential to grow and make a long-lasting impact.

WHAT WE PROMISE

Purposeful Approach and Actionable Impact
The top minds in business, government, media, arts, among multiple disciplines are here to share with you their knowledge, experience and best practices! You will be ready to apply what you've learned in your work, to launch new products and ventures, to implement functional improvements, and most importantly to discover your hidden potential!

Distinctive Learning Methods and Tools
Whether online or in presence, our programs are delivered using interactive and experiential methods through case studies, business simulations, and small group discussions, in addition to providing strategies, tools, and insights to solve our participants' most challenging problems.

Renowned Inspirational Instructors (faculty & practitioners)
Drawing on ongoing research and real-world experience, our experts will change your mindset and empower you to innovate and go the extra mile.

Collaborative Environment and Networking Opportunities
Designed to encourage interaction with peers, our programs will help you collaborate, learn, and socialize with all LLC members ranging from diversified disciplines, industries, and regions. LLC helps you establish relationships that enrich your personal and professional life long after you finish the program.

OUR PROGRAMS

LLC provides world-class programs that respond to the needs of both private and public sectors. These programs aim to develop professional, entrepreneurial, and socially responsible leaders through differentiated and results-oriented set of courses.

Executive Programs
Executive Programs focus on relevant topics dedicated to the highly specialized needs of professionals. They are designed to allow the immediate implementation of learnings to address challenges confronting the participants and their organizations.

- Digital Marketing (40 hours)
- Advanced Forensic Science (40 hours)
- Forensic Science (40 hours)
- Digital Media (40 hours)
- Animation & Visual Effects (40 hours)
- Beach Volleyball Training and Management (40 hours)
- Advanced Digital Marketing (40 hours)

Professional Development Programs
LLC's Professional Development Programs give participants the knowledge and expertise you need to excel in the workplace.

- Fundamentals of Aviation (150 hours)
- Human Resource Management (5 modules; 15 hours/module)
- Proficiency in English (6 levels; 20 hours/level)
- Humanities, Heritage and Arabic Program (30 hours)

Corporate Custom Programs
Corporate Custom Programs are training programs that are co-designed and developed with LLC's partner organizations. The ensure focus and alignment with the organization's unique challenges and needs.

Self-Designed Programs
This approach utilizes the latest academic innovations to enable professionals to develop their proficiencies in diverse and multidisciplinary areas of concentration in a personalized, fast, and more manageable manner. These courses' credentials can be earned over time, stacked in a process towards earning a program diploma; thus, building an individual's qualifications that lead to more career opportunities, advancement, and potentially high paying jobs.

OUR COURSES

Our leading-edge, differentiated, and results-oriented courses are specially designed to change the participants mindset, increase their analytical skills, and widen their reach on national and regional levels.

- Data Visualization using MS Power BI Course (15 hours)
- Data Analysis using MS Excel Course (15 hours)
- Social Media Management Course (16 hours)
- Generative AI: ChatGPT & Beyond Course (25 hours)
- Generative AI: Prompt Engineering Course (25 hours)
- User Experience (UX) Course (15 hours)
- Phone Photography Course (15 hours)
- The Leadership Mindset Course (15 hours)
- Project Management course (15 hours)
- Programming using Python course (15 hours)
- Events Management course (15 hours)
- Entrepreneurship course (15 hours)
- Game development course (15 hours)
- Create Your Own Brand Course (15 hours)
- Guided and Skilled Course (25 hours)
- Style Coaching Course (15 hours)
- Recruitment & Selection Course (15 hours)
- Introduction Human Resources Management (HRM) Course (15 hours)
- Human Resources Development (HRD) Course (15 hours)
- Compensation & Benefit Course (15 hours)
- Employees Relations Course (15 hours)
- Drone Operator course (15 hours)
- Marketing & Creative Strategies for SMEs course (15 hours)
- Media Strategies and Practices (MTV-LLC) (22 hours)
- Foundation of Counseling: Theory, Skills and Practice course(15 hours)
- Mastering the capital markets course (15 hours)
- AI Assisted Business English Certificate (15 hours)
- People Management and Leadership (15 hours)
- Bridging the gap in English skills course (20 hours)
- Language courses (15 hours)
- Web Design & Development Front - End (15 hours)
- Web Design & Development Back - End (15 hours)
- Astrophotography course (15 hours)
- Adobe Photoshop Course (15 hours)
- Adobe Illustrator Course (16 hours)
- Graphic Design Course (15 hours)

OUR WORKSHOPS

Our "Ateliers" are smaller workshop oriented programs which enhance the participants' skills and passion for discovering their talents and artistic capabilities.

- Candle Making workshop (8 hours)
- Soap Making workshop (3 hours)

CERTIPORT CERTIFICATION PROGRAMS

NDU LLC is also an Authorized Certiport Testing Center. Certiport manages a sophisticated portfolio of leading certification programs including:

- Adobe Certified Professional
- App Development with Swift Certification
- Autodesk Certified User
- Communication Skills for Business
- Entrepreneurship and Small Business Certification
- IC3 Digital Literacy Certification
- Intuit Certifications
- IT Specialist Certification
- Microsoft Certified Fundamentals
- Microsoft Certified Educator (MCE)
- Microsoft Office Specialist (MOS)
- PMI Project Management Ready™ Certification
- Unity Certified User Certification
- My Pathway: Educator resources :: Certiport
- Cyber Security Cyber Security Training & Certifications | Information
- Security Certifications | EC-Council& Certifications | Information
- Security Certifications | EC-Council (eccouncil.org)
- (IT) Information Technology Certifications | CompTIA IT Certifications

To know more about the LLC Programs, Courses, and Workshops please visit our webpage by clicking on the below link:
https://www.ndu.edu.lb/lifelong-learning-center/home

RAMEZ G. CHAGOURY
FACULTY OF
ARCHITECTURE
ARTS & DESIGN

FAAD

FACULTY DIRECTORY

FACULTY DIRECTORY

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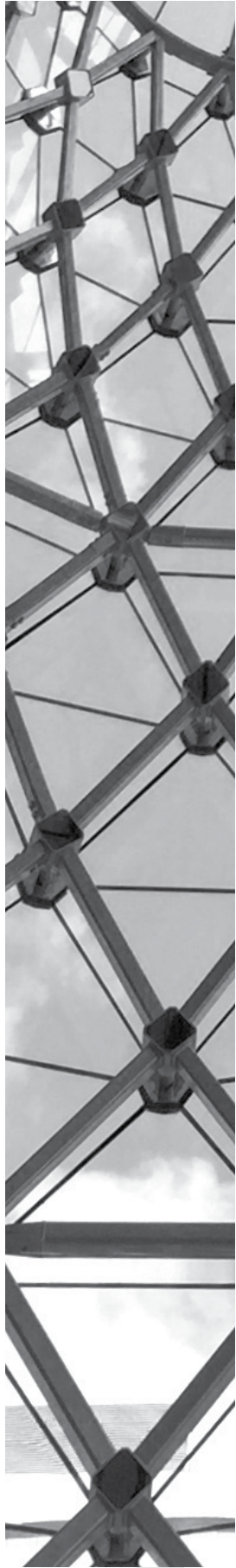

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Shouf Campus

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FACULTY PROFILE

RAMEZ G. CHAGOURY FACULTY OF ARCHITECTURE, ARTS AND DESIGN (FAAD)

Associate Professors:	Boujaoudeh Khoury, Karen; Hindi, Nadine; Melki, Habib; Younes, Farid; Zgheib, Hani.
Assistant Professors:	El Hage, Gabriel; Khoury, Tarek; Samra, Kristine; Shebaby, Rina.
Senior Lecturers:	Akl, Salim; Bteich, Chadi; Chamoun, Claudine; Daher, Bassam; Hawi, Elie; Jabbour, Layla; Lawoun, Dolcy; Majdalani, Roula.
Lecturers:	Akl, Charbel; El Khoury, Simona; Ibrahim, Tamara; Kallab, Alexandra; Mikhael, Mia Maria; Nakad, Aline.
Laboratory Instructor:	Sarkis, Rita

RAMEZ G. CHAGOURY FACULTY OF ARCHITECTURE, ARTS AND DESIGN (FAAD)

FACULTY PROFILE

The Faculty of Architecture Arts and Design (FAAD) has its roots in the Faculty of Engineering/Architecture since 1994, and the Faculty of Humanities-Visual Arts Department, since 1987. In 1999, the FAAD evolved from two different Departments and from two different Faculties into a unique, growing, and independent Faculty housing three Departments with their respective and varied undergraduate and graduate majors. In 2016, the FAAD was renamed, after the late Ramez G. Chagoury and became the Ramez G. Chagoury Faculty of Architecture, Arts and Design (FAAD).

In Fall 2001, the Graphic and Interior Design majors began to be offered in the North Lebanon Campus (NLC) campus, with the Graphic Design major offered in the Shouf Campus (SC) as of Fall 2002. In 2010, the Architecture Major started accepting students in the NLC and SC.

At present, the Faculty awards various degrees in a range of disciplines at both the undergraduate and graduate levels.

MISSION, VISION, AND VALUES

Mission

The Ramez G. Chagoury Faculty of Architecture, Arts and Design (FAAD) strives to promote an academic milieu for students from Lebanon and abroad, where design, arts, and architecture are the vectors of the University values. The range of programs offered by the various departments of the FAAD is devised to foster an environment of intellectual inquisitiveness. Based on the American Liberal Arts system, the FAAD prepares its graduates (Musicians, Interior Designers, Graphic Designers, Fine Artists, Photographers, Fashion Designers, and Architects) to be the standard-bearers of the University's moral, social, and academic values.

Vision

The Faculty strives to be the leading provider of professional programs in Arts and Design, and to deliver outstanding education/training programs and provide opportunities to develop high levels of creative ambitions and technical skills to enable students to play a dynamic role in developing their respective fields. Students will learn to challenge conventional wisdom from an informed and constructive position and be encouraged to engage in self-directed approaches to the acquisition of knowledge and understanding. Supporting faculty members' involvement in research, professional practice, development of teaching, and learning methodology are a must in order to establish a more scholarly and professional environment.

Values

Educating students to build their future does not solely rely on us providing them with the technical tools and learning material to pursue a career. The FAAD prides itself on providing guidance to help individuals discover their own vision, thereby aiding them in becoming both professional and responsible.

On-campus interactions between NDU FAAD faculty members, staff, and students are characterized by a mutual respect for long-held traditions as well as an openness and acceptance of positive change and constructive criticism. One of the Faculty's main values is to foster a culturally diverse environment where everyone is treated according to their human values and dignity, regardless of religion, ethnicity, belief, or gender.

The Faculty encourages its students' active involvement in environmental, educational, and social issues as it supports them in their quest to make a genuine and lasting difference in their surroundings.

Faith is a part of the FAAD's identity, hence the reliance on open communication and full cooperation to ensure that every one's views and beliefs are respected University-wide in general and at the FAAD in particular. In order to maintain a dynamic learning environment that shapes principled individuals, the FAAD cherishes those values as part of its educational identity and thus promotes:

- Tolerance of all human beings regardless of background;
- Cooperation between all members of NDU to ensure personal and professional growth;
- Communication of views and beliefs within a positive and responsive environment; and
- Diversity and cultural exchange devoid of prejudice and judgment.

GENERAL FACULTY LEARNING OBJECTIVES

The overall aim is to provide a comprehensive and flexible range of programs in response to the educational and professional needs of the local community and the regional, national, and international demands. In addition, the FAAD seeks to secure the opportunity for personal and professional development in any of the following areas: Architecture, Art, or Design. In more specific terms:

- To help individuals develop their creative, intellectual, and technical abilities, and enhance their expertise to make informed contributions to the cultural, technological, social, and economic needs of society in general;
- To foster fundamental learning and research skills coupled with an understanding of the historical, cultural, social, and commercial arena within which those engaged in architecture, arts, and design operate;
- To equip individuals for an array of career paths and changes in employment patterns, thus promoting ingenuity, adaptability, and mobility; and
- To enable students at all levels to adapt to varied problems, tasks, and technologies.

ACADEMIC DEPARTMENTS AND PROGRAMS

The following departments and programs constitute the FAAD:

- Department of Architecture
- Department of Design
- Department of Music

Degrees

The Department of Architecture offers an undergraduate program leading to the degree of:

- Bachelor of Architecture (172 credits)

And a graduate program leading to the degree of:

- Master of Arts in
  - Urban Design (30 credits)*
  - Sustainable Architecture (30 credits)

The Department of Design offers undergraduate programs leading to the degrees of:

- BA in Graphic Design (102 credits)
- BA in Interior Design (136 credits)
- BA in Fashion Design (102 credits)
- BA in Photography (102 credits)*

And a graduate program leading to the degree of:

- Master of Arts in Design (36 credits)

And Minors in the following fields:

- Minor in Graphic Design (18 credits)
- Minor in Photography (18 credits)*

The Department of Music offers undergraduate programs leading to the degree of:

- BA in Music and Musicology - Musicology (99 credits)
- BA in Music and Musicology - Musimedialogy (99 credits)*
- BA in Music and Musicology - Jazz Music (99 credits)*
- BA in Music and Musicology - Arabic Music (99 credits)*
- BA in Music and Musicology - Music Education (99 credits)*

And a graduate program leading to the degree of:

- Master of Arts in Music (36 credits)*
- And a minor in Jazz (15 credits)*
- And a minor in Musicology (15 credits)

Self-Designed Interdisciplinary Minor Program

NDU aims to provide students with the programs they need for their future and offers them the opportunity to design their own Self-Designed Interdisciplinary Minor program. Students who would like to explore this option have to fill in the Minor Proposal with the collaboration of the concerned Faculty and Office of the Registrar. For guidelines, rules, and regulations of the Self-Designed Interdisciplinary Minor, kindly refer to the Office of Registrar.

*Not offered at the present time

POLICIES AND PROCEDURES

Admission Requirements:

In addition to the University admission requirements, prospective candidates must complete any remedial course(s) during the first year of enrollment. Students who fail to meet these requirements will not be allowed to proceed to their BA in the FAAD.

LIBERAL ARTS CORE CURRICULUM (LAC)

The LAC are distributed as follows:

Category I. English and Arabic Communication (9 credits)

A. English Communication (6 credits)
ENL 213 Sophomore Rhetoric (3 credits).

And
ENL 223 Communication Arts (3 credits)

Or
ENL 230 English in the Workplace (3 credits)

Or
ENL 231 Work Ready Now

B. Arabic Communication (3 credits) (One from the following pool)
ARB 211 Appreciation of Arabic Literature
ARB 212 Advanced Arabic Grammar
ARB 224 Arabic Literature and Human Thought
ARB 231 Technical Arabic
ARB 306 The Modern Arabic Novel and Short Story
ARB 310 Arabic Theater

Category II. Religion (3 credits)

REG 212 Religion and Social Issues
REG 213 Catholicism
REG 215 World Religions
REG 313 The Maronites: Faith and Cultural Heritages
REG 314 Marriage and Family in the Catholic Church

Category III. Ethics (3 credits)

ARP 329 Ethics in Architecture and Design
CSC 203 Information Age and Ethics
COA 360 Media Ethics
ENG 310 Ethics in Engineering: Architecture Department
ENS 205 Environment, Society and Ethics
MGT 301 Ethics and responsible Business
NUR 203 Introduction to Bioethics
PHL 311 Ethics and the Modern World: Design, Arts and Music Department
POS 345 Ethics and Leadership

Category IV. Citizenship (3 credits)

ENS	202	The Environment and Sustainable Development
FQM	200	Food Security and Sustainability
POS	201	Introduction to Political Science
POS	209	Citizenship
POS	210	Government and Politics of Lebanon
POS	240	Law and Society
POS	319	Democracy and Human Rights

Category V. Cultural Studies and Social Science (6 credits) - Faculty Contributions

A. Cultural Studies

ARP	215	Cultural Themes in Lebanese Architecture
AVF	315	World Cinema Survey
COA	350	Current Issues
FAP	215	Arts and Culture
HIT	211	History of Lebanon and the Middle East
HTM	201	Fundamentals of Hospitality and Cultural Tourism
HTM	326	Lebanon's Culture, Heritage and Nature Tourism
LIR	214	Introduction to Literary Genres
LIR	217	American Literature to the End of the 19th Century
LIR	305	Novel to the End of the 19th Century
MUS	210	Music Appreciation
NTR	215	Foods and Nutrition of World Cultures
PHL	211	Logic and the Scientific Method
PHL	232	Ancient World Philosophy
PHL	333	Medieval World Philosophy
PHL	334	Modern and Contemporary World Philosophy
POS	225	Politics of Catholic Social Theory
ROC	301	Romance Cultures

B. Social Sciences

CSC	206	Games and Society
ECN	211	Principles of Microeconomics
ECN	212	Principles of Macroeconomics
ENG	210	Introduction to Engineering Economy
ENG	220	Engineering Innovation
MGT	201	Fundamentals of Management
MRK	201	Fundamentals of Marketing
PSL	201	Introduction to Psychology
SOL	201	Introduction to Sociology
SOL	316	Society and Women
SOL	322	Family: Sociological Perspectives
SOL	323	Society and Role of Global Intercultural Communication
SOL	313	Family Violence

Category VI. Applied and Life Sciences

> (3 credits) for Architecture and Graphic Design Students - Category VI.A (3 credits) excluded

> (6 credits) for Other Majors at FAAD)

A. Applied Science (Category Excluded for Architecture and Graphic Design Students)

CSC	201	Introduction to Computers
CSC	202	Computers for Visual Arts
CSC	207	Navigating the Age of Artificial Intelligence
ENG	250	Robotics and Society
GIS	211	Principles of Geographical Information Sciences
MAT	203	Everyday Math
MIS	201	Management Information Systems

B. Life and Natural Sciences

AST	201	Discovering Astronomy
BIO	201	Your Body in Action
CHM	201	Chemistry in everyday Life
ENS	201	Introduction to Environmental Science
HEA	201	Health Awareness
HEA	204	Contemporary Health Issues
NTR	201	Basic Human Nutrition
ENS	203	Biodiversity

DEPARTMENT OF ARCHITECTURE

Associate Professors: Boujaoudeh Khoury, Karen; Hindi, Nadine; Melki, Habib; Younes, Farid; Zgheib, Hani.

Assistant Professors: El-Hage, Gabriel; Samra, Kristine.

Senior Lecturers: Bteich, Chady; Daher, Bassam; Hawi, Elie; Jabbour, Layla.

Lecturers: Akl, Charbel; Kallab, Alexandra; Nakad, Aline.

THE DEGREE OF BACHELOR OF ARCHITECTURE

Mission

The mission of the Bachelor of Architecture (B.Arch.) program is to train students to cultivate critical thinking through deep analysis of architectural history and theory, to increase awareness of environmental, urban, social, and cultural issues, and most importantly, to design, based on a process of research, analysis, and conceptual thinking that lead to innovative architectural applications.

National Architectural Accrediting Board (NAAB)

The Bachelor of Architecture program (172 credits) at Notre Dame University - Louaize application for Initial Candidacy, including the Visiting Team Report (VTR), was reviewed during the April 26-27, 2024, Board of Directors meeting of the National Architectural Accrediting Board (NAAB).

Based on the following review of the program, the NAAB directors voted to grant the B.Arch. program a two-year term of Initial Candidacy.

Program Educational Objectives

The B.Arch. program offered by the Department of Architecture at the FAAD aims to:

- Provide the learner with the proper exposure to foster a reflective approach to design and enhance critical thinking;
- Develop the intellectual and theoretical backgrounds of students through the study of ancient, modern, and contemporary history and theories of architecture;
- Increase students' awareness with respect to environmental and social issues. This concern mainly focuses on the interrelated influence between the human being, society, and architecture;
- Contribute to the architectural epistemology; and
- Prepare the learner for professional practice and post-graduate studies.

Learning Outcomes

Upon graduation, B.Arch. students will:

- Develop design communication skills
- Be inquisitive and broadly informed
- Practice critical thinking in design research
- Relate cultural and historical knowledge to architectural design
- Design according to Lebanese building rules and regulations

- Identify appropriate structural systems in reaction to static and dynamic forces;
- Convey technical information appropriately
- Demonstrate understanding of building service systems
- Recognize building materials and assemblies
- Estimate financial implications on building construction
- Integrate environmental, financial, and social concerns to conduct sustainable design approaches
- Conduct comprehensive design approaches including technological, and structural systems and assemblies
- Implement design solutions related to safety regulations and standards
- Apply skills and acquired knowledge in professional practice
- Manage design projects involving various stakeholders
- Appraise professionally and ethically the requirements of clients, the public and other stakeholders
- Lead in supporting communities on projects to meet social needs in a collaborative manner.

Admission Requirements
In addition to the University admission requirements, prospective candidates must complete all remedial courses, Math, Physics, and/or English, if any, during their first year at NDU. Students who fail to meet the above requirements will not be allowed to proceed to the degree courses in Architecture.

Graduation Requirements
To obtain the degree of Bachelor of Architecture, a student must complete a total of 172 credits with an overall GPA of at least 2.0/4.0.
In addition, all Core and Major courses must be successfully completed with a minimum grade of "C-."

Similarly, all Architectural Design courses (ARP 222, ARP 232, ARP 311, ARP 322, ARP 433, ARP 444, ARP 555, ARP 556, ARP 590, ARP 592, and ARP 594) must be successfully completed with a minimum grade of "C+."
Prior to registering for ARP 590, students will have to fulfil the following requirements:

- A minimum of 21 credits of their LAC courses must be completed prior to taking ARP 590.
- Prerequisites: ARP 438, ARP 556, ARP 562, ARP 454.
- ARP 329 is obligatory for Architecture students

These 172 credits are divided into:

Degree Requirements (172 credits)

Liberal Arts Core Curriculum (LAC) **27 cr.**

Core Requirements **3 cr.**
FAP 211.

Major Requirements **136 cr.**
ARP 221, ARP 222, ARP 223, ARP 224, ARP 225, ARP 226, ARP 232, ARP 301, ARP 311, ARP 313, ARP 316, ARP 317, ARP 322, ARP 324, ARP 325, ARP 327, ARP 328, ARP 424, ARP 426, ARP 433, ARP 435, ARP 438, ARP 444, ARP 446, ARP 454, ARP 551, ARP 552, ARP 569, ARP 555, ARP 556, ARP 561, ARP 562, ARP 563, ARP 568, ARP 590, ARP 592, ARP 594.

Choose two courses from the following Major Electives I (6 cr.):
ARP 434, ARP 553, ARP 564, ARP 565, ARP 567, ARP 570, ARP 571, ARP 572.

Choose one course from the following Major Electives II (2 cr.):
ARP 233, ARP 422, ARP 423, ARP 581, ARP 582, ARP 585, ARP 586.

Free Electives **6 cr.**

Undergraduate Courses: Architecture

ARP 215 Cultural Themes in Lebanese Architecture (3.0); 3 cr. This course is an initiation to the Lebanese Art and Architecture pointing toward the conceptual determinants and constants omnipresent in the Lebanese Culture. A historical overview showing the morphological development through time.

ARP 221 Architectural Sketching and Rendering (0.6); 3 cr. This course examines visual perception and spatial concepts through sketching and the use of different freehand media. *Prerequisites:* FAP 211, ARP 226.

ARP 222 Principles of Architectural Design (0.6); 3 cr. This course introduces principles of design and includes the study of colors, proportions, and perception principles. Focuses on practicing learning through life-size models.

ARP 223 Descriptive Geometry (0.6); 3 cr. This course introduces the study of geometric projections in space. Also includes the study of intersection of solids and volumetric development.

ARP 224 Applied Architectural Design I (0.6); 3 cr. This course introduces the application of computer aided design (CAD) concepts in developing and communicating architectural ideas and projects. Includes various software applications.

ARP 225 Statics for Architecture (3.0); 3 cr. This course is based on the study of forces, moments, and couples. It also covers free body diagrams, centroids, moments of inertia, problems involving beams, trusses, and frames. *Prerequisites:* MAT 103, PHS 101, ENL 110 (if required).

ARP 226 Technical Drawing I (0.6); 3 cr. This course introduces graphic communication skills. It Includes 2D and 3D drafting techniques for representing architectural objects and projects.

ARP 232 Methodology of Architectural Design (0.6); 3 cr. This course introduces architecture design methodologies. It includes analysis of precedents, and development of small scale projects. *Prerequisites:* ENL105 (if required), ARP 222, AR P223, ARP 226.

ARP 233 3D Architectural Survey (0.4); 2 cr. The objective of this course is to help students understand and experiment with the construction of architectural models of different scale and materials. Students will plan and research the use, details, budget, and techniques before construction. *Prerequisites:* ARP 223, ARP 226.

ARP 301 Technical Drawing II (0.6); 3 cr. This course focuses on perspective drawing in architecture. It covers various vanishing point perspectives and the construction of shadows. *Prerequisites:* ARP 223, ARP 226.

ARP 311 Architectural Design I (3.6); 6 cr. This course introduces basic architectural issues through the analysis of context and precedents as well as practice learning. *Prerequisites:* MAT 103, PHS 101 (if required), ARP 221, ARP 232, ARP 301.

ARP 313 History of Architecture I (3.0); 3 cr. This course introduces the genesis of architecture. It explores its development from prehistoric times to the Roman Empire. *Prerequisite:* ENL 105 (if required).

ARP 316 Strength of Materials (3.0); 3 cr. This course includes a study of material properties including normal stresses, axial loads, bending moments, shear stresses, and column buckling, provided with real life examples. *Prerequisite:* ARP 225.

ARP 317 Building Technology I (3.0); 3 cr. This course introduces resolving technological design problems through practice via the appropriate and available building materials

and construction techniques. *Prerequisites:* ENL 105 (if required), ARP 226.

ARP 322 Architectural Design II (3.6); 6 cr. This course emphasizes the basics of designing models and materials for small-scale projects through a hands-on approach. *Prerequisites:* ARP 311, ARP 225.

ARP 324 History of Architecture II (3.0); 3 cr. This course includes the development of architecture in the Middle Ages in Western Europe, in addition to Byzantine and Islamic Architecture in Eastern Europe and the Near East. *Prerequisites:* ARP 313, ENL110.

ARP 325 Applied Architectural Design II (0.6) 3 cr. This course focuses on modeling and rendering complex 3D architecture and industrial design products. It also includes the investigation of digital media to generate advanced representations. *Prerequisite:* ARP 224.

ARP 327 Structural Analysis (3.0); 3 cr. This course explores structural forms and their analysis. It also introduces indeterminate structures, steel structures, structural modeling, and analysis. *Prerequisite:* ARP 316.

ARP 328 Building Technology II (3.0); 3 cr. This course develops technical knowledge and design application, with a focus on practice learning, examining building systems, services, safety codes, and construction technology. *Prerequisites:* ENL 213, ARP 317.

ARP 329 Ethics in Architecture and Design (3.0); 3 cr. This course introduces students in Architecture and Design to ethics and familiarizes them with the ethical issues encountered while making professional judgments. The course introduces professional codes of ethics in architecture and design (NCARB, AIA and AIGA) and their roles in guiding professional conduct. The course initiates students to plan for their future careers.

ARP 422 Lighting Design and Electrical Systems (2.0); 2 cr. This course is an introduction to types of artificial light sources, measurement and control of light, lighting systems design, and electrical requirements and distribution in buildings. *Prerequisite:* ARP 328.

ARP 423 Acoustics (2.0); 2 cr. This course focuses on analysis, design, and detailing of acoustical factors influencing space and building design. *Prerequisite:* ARP 328.

ARP 424 Bio-climatic Architecture (3.0); 3 cr. This course includes environmental aspects in architectural design. It also focuses on energy efficiency from concept to execution through practice and includes evaluation of locally-used materials. *Prerequisite:* ARP 328.

ARP 426 Internship (0.2); 1 cr. This course comprises a supervised internship and also includes introduction to professional practice, ethics, job applications, and reporting on work. *Prerequisite:* ARP 552.

ARP 433 Architectural Design III (3.6); 6 cr. This course introduces practice learning, design methodology, contextual design, building regulations, structural systems, critical analysis, and synthesis tools. It also investigates housing typologies and shelters. *Prerequisite:* ARP 322.

ARP 434 Electrical and Mechanical Systems (3.0); 3 cr. This course is a preliminary analysis, estimation, and design consideration of building electrical and mechanical systems including electricity and lighting, water distribution, drainage, and HVAC. *Prerequisite:* ARP 328.

ARP 435 History of Architecture III (3.0); 3 cr. This course introduces pre-modern architecture from Renaissance revival styles to the 19th-century industrial architecture and includes a preparation for exploring the modernist period. *Prerequisites:* ENL 213, ARP 324.

ARP 438 Reinforced Concrete Design (3.0); 3 cr. This course explores the behavior of concrete, its dimensioning, and various structural elements. It also includes the analysis and design in concrete. *Prerequisite:* ARP 327.

ARP 444 Architectural Design IV (3.6); 6 cr. This course engages students in an experimental approach throughout their design process, works with modularity, and seeks unconventional design solutions. *Prerequisites:* ARP 325, ARP 433.

ARP 446 History of Architecture IV (3.0); 3 cr. This course explores modern and contemporary architecture starting with the Chicago School. It also covers architectural approaches in Europe and North America until the 21st century. *Prerequisite:* ARP 435.

ARP 454 Surveying and Field Surveying (3.0); 3 cr. This course includes practice on instrumentation for topographic mapping and field surveying. It introduces photogrammetric, remote sensing, and global positioning techniques through practice learning. *Prerequisites:* ARP 311, ARP 328.

ARP 551 Construction Detailing Studio I (0.6); 3 cr. This course introduces the elaboration of architectural construction documents and includes examination of local and international building standards. *Prerequisites:* ARP 224, ARP 328, ARP 311.

ARP 552 Construction Detailing Studio II (0.6); 3 cr. This course investigates construction detailing in actual architectural environments through practice learning. It also includes methods of construction, assembly systems, and building enclosures. *Prerequisite:* ARP 551.

ARP 553 Specifications and Quantity Surveying (3.0); 3 cr. This course covers specifications and tender document writing as well as the sources and methods of classification for subsequent use. Practice projects. *Prerequisite:* ARP 551.

ARP 555 Architectural Design V (3.6); 6 cr. The course addresses complex large scale architectural projects while emphasizing building systems and environmental considerations within a service learning approach. *Prerequisites:* ARP 424, ARP 444.

ARP 556 Architectural Design VI (3.6); 6 cr. This course focuses on urban analysis and urban methodologies engaging students in service learning to develop informed and integrated architectural programs. *Prerequisites:* ARP 552, ARP 555, ARP 561, ARP 563.

ARP 561 Urbanism I (3.0); 3 cr. This course introduces urban design and the evolution of cities. It also introduces urban analysis tools and includes field survey as service learning. *Prerequisites:* ARP 444, ARP 446.

ARP 562 Urbanism II (3.0); 3 cr. This course is based on a survey of different past and present approaches and trends to urban planning. It focuses on understanding urban planning in Lebanon through service learning. *Prerequisite:* ARP 561.

ARP 563 Building Rules and Regulations (3.0); 3 cr. This course examines the Lebanese building rules and regulations through the practice of different case studies. It also includes architects' professional ethical, moral, and legal responsibilities. *Prerequisite:* ARP 433.

ARP 564 Restoration of Monuments (3.0); 3 cr. This course is an introduction to restoration projects, professional characteristics, and applications on selected buildings through a service learning approach. *Prerequisites:* ARP 433, ARP 435.

ARP 565 Landscape Architecture (3.0); 3 cr. This course introduces principles of design and problem solving processes as applied to fundamentals of design form in the landscape through a service learning approach. *Prerequisites:* ARP 433, ARP 446.

ARP 567 Archaeology (3.0); 3 cr. This course studies cultural heritage and rediscovering human experience, with a focus on Lebanon's archaeology including history, artifact recording or ethnographic data, composition, and description. *Prerequisite:* ARP 446.

ARP 568 Social Architecture (3.0); 3 cr. This course introduces research in sociology with a service learning approach. It provides a comprehensive overview of the contribution of behavioral sciences to architectural theory. *Prerequisite:* ARP 446.

ARP 569 Project Planning and Management (3.0); 3 cr. This course introduces the principles and practices of the project management stages. It also includes service learning by applying the course in real life projects. *Prerequisite:* ARP 551.

ARP 570 Public Spaces (3.0); 3 cr. This course provides a critical understanding of the nature and state of public space as seen from various perspectives, with a service learning approach. *Prerequisite:* ARP 433.

ARP 571 Seminar III (3.0); 3 cr. This course is based on seminars examining special topics and includes introductions to new concepts and methods. *Prerequisite:* ARP 433.

ARP 572 Seminar IV (3.0); 3 cr. This course is based on seminars examining special topics and includes introductions to new concepts and methods. *Prerequisite:* ARP 433.

ARP 581 Seminar I (2.0); 2 cr. This course is based on seminars examining special topics and includes introductions to new concepts and methods. *Prerequisite:* ARP 433.

ARP 582 Seminar II (2.0); 2 cr. This course is based on seminars examining special topics and includes introductions to new concepts and methods. *Prerequisite:* ARP 433.

ARP 585 Topics in Japanese Architecture (2.0); 2 cr. This course is based on the analysis of theoretical, cultural, and historical determinants as they may be applied to select contemporary Japanese architects and buildings. *Prerequisite:* ARP 433.

ARP 586 Topics in Lebanese Architecture (2.0); 2 cr. This course includes an analysis of theoretical, cultural, and historical determinants. It includes the application of this analysis to Lebanese architects and buildings. *Prerequisite:* ARP 433.

ARP 590 Senior Study (0.4); 2 cr. This course introduces research on architectural topics and serves as senior project preparation and includes the justification of project choice. *Prerequisites:* ARP 454, ARP 556, ARP 438, ARP 562.

ARP 592 Senior Studio I (0.8); 4 cr. This course includes research that defines the theoretical and conceptual frameworks for the design strategy, massing alternatives, and developed program planning. *Prerequisite:* ARP 590.

ARP 594 Senior Studio II (0.8); 4 cr. This course is a continuation of ARP 592. It includes the comprehensive and informed development of a comprehensive architectural project with advanced architectural representation. *Prerequisite:* ARP 592.

THE DEGREE OF MASTER OF ARTS IN URBAN DESIGN*
THE DEGREE OF MASTER OF ARTS IN SUSTAINABLE ARCHITECTURE

Program Description

There is an increasing demand to address the built environment we live in and related natural environmental issues at various levels. These issues often manifest themselves in our daily lives in cities, on streets, and at home. Solutions to such issues are addressed through urban and building scales, which respond to contextual, social, economic, cultural, and environmental specificities and needs.

Graduates of the MA in Sustainable Architecture will demonstrate:

- Knowledge of the impact of the built environment on the natural environment, with a special focus on the MENA region;
- Knowledge of the key concepts and principles of sustainability;
- Knowledge of the elements of indoor and outdoor comfort;
- Ability to investigate contextual, socio-cultural, and environmental constraints;
- Ability to perform simulations to predict buildings' behavior with respect to different environmental parameters; and
- Ability to propose sustainable energy efficient design solutions in response to socio-cultural and environmental constraints.

Graduates of the MA in Urban Design* will demonstrate:

- Knowledge of geographic information system and its spatial applications;
- Knowledge of the urban planning system and regulations in Lebanon;
- Knowledge of urban transportation strategies;
- Ability to apply key concepts and principles of urban design;
- Ability to explore the relation between the built and the natural environment; and
- Ability to propose urban interventions through public spaces and other approaches and contribute to urban regeneration.

Structure

Following the Bachelor of Architecture program, the department offers the Masters of Arts program in Urban Design and the Masters of Arts program in Sustainable Architecture.

The two programs share core courses, which establish a common platform for the graduate students and a necessary understanding of key aspects, and each has a specific concentration. The Urban Design concentration addresses contemporary urban issues related to environment, the public realm, urban transportation along with the development and regeneration of critical urban areas. The Sustainable Architecture concentration introduces students to simulation training pertaining to architects, case study applications, and passive energy design.

Within each concentration, students can select from several courses to aid their master's thesis. The paths of both concentrations end with the master's thesis research. The thesis would allow participants to apply the knowledge acquired throughout the program.

*Not offered at the present time

Admission Requirements
In addition to the University admission requirements for graduate students (refer to: https://www.ndu.edu.lb/admissions/graduate/selection-process), the candidate must submit a letter of intent (in which the candidate's background, reasons for selecting this program, future utilization of this degree, and other expectations are clearly stated), and schedule an interview with the Department Graduate Committee (DGC).

Candidates may be granted course substitution on a case-by-case basis. A full-time student must take a minimum of 9 credits per semester.

The program targets fresh graduates, and professionals with undergraduate degrees in Architecture, Landscape Architecture, and Civil Engineering. Graduates and professionals from other degrees will be accepted on a case-by-case basis.

Graduation Requirements
Students seeking the graduate degree in Architecture must meet the University's graduation requirements and complete the 30 credits with a minimum passing grade of C for graduate courses. Students in graduate studies are required to maintain a cumulative GPA of at least 3.0/4.0 with no more than 2 Cs per program.

Core Courses **15 cr.**
MAP 610, MAR 620, MAD 636, MAP 624, two ARP5 courses (refer to the Bachelor of Architecture program).

Courses from the concentrations **9 cr.**
MAR 611, MAR 612, MAR 613, MAR 614, MAR 615, MAR 616, MAR 631, MAR 632, MAR 633, MAR 634, MAR 635.

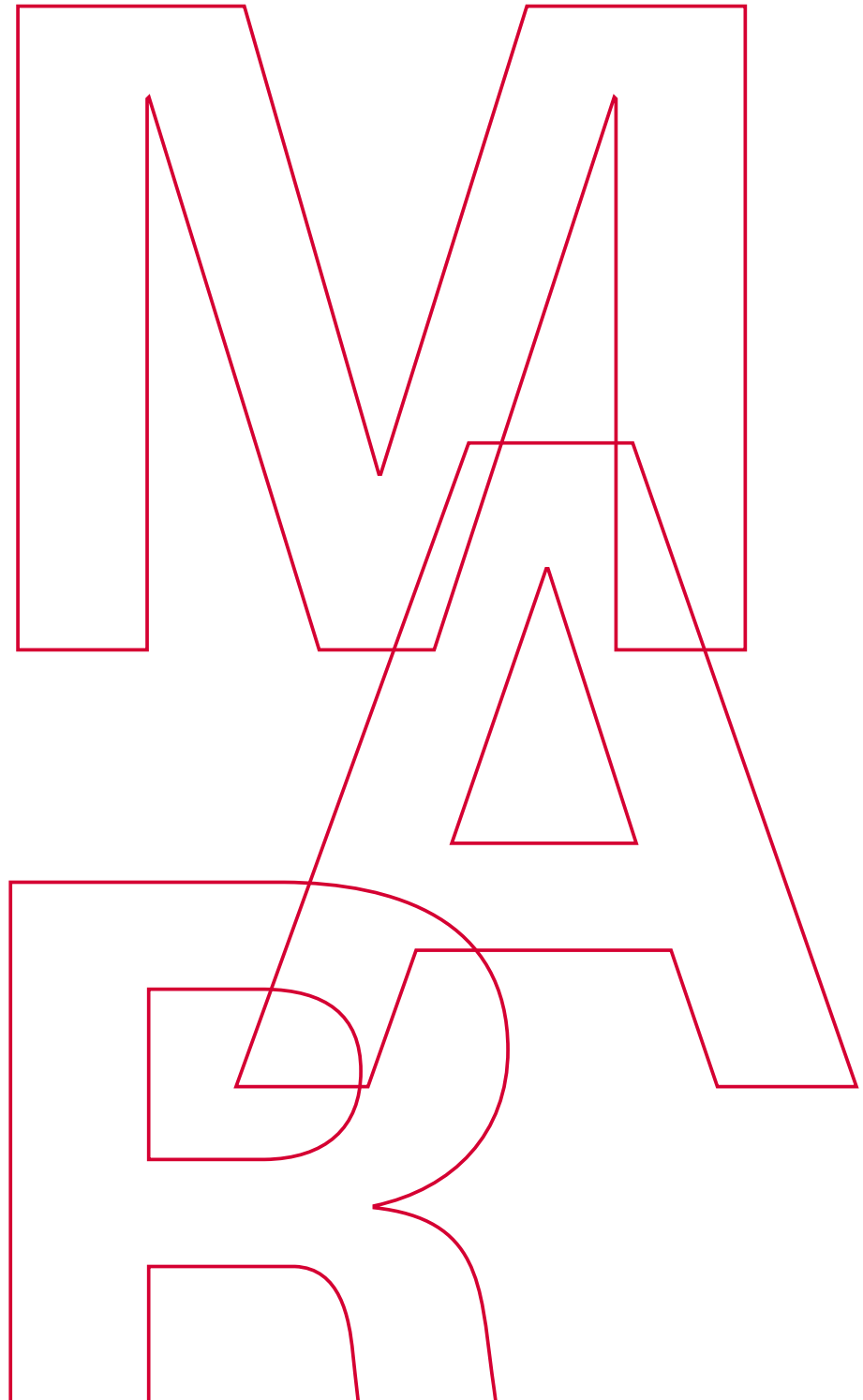
Thesis **6 cr.**
MAR 690.

Concentration:
Master of Arts in Urban Design* (9 cr.)
Students following the Master of Arts in Urban Design must take two courses (6 credits) from this concentration and one course (3 credits) from the other concentration:

MAR 611	GIS and Remote Sensing	**3 cr.**
MAR 612	Overview on Urban Design and Planning	**3 cr.**
MAR 613	Basic environmental Concepts Related to Urban Design and Planning	**3 cr.**
MAR 614	Urban Development and Regeneration	**3 cr.**
MAR 615	Urban Transportation Systems	**3 cr.**
MAR 616	Urban Public Spaces	**3 cr.**
MAR 6--	Choose one course from the other concentrations	**3 cr.**

Master of Arts in Sustainable Architecture (9 cr.)
Students following the Master of Arts in Sustainable Architecture must take two courses (6 credits) from this concentration and one course (3 credits) from the other concentration:

MAR 631	Sustainable Architecture	**3 cr.**
MAR 632	Green Architecture for the MENA region	**3 cr.**
MAR 633	Human Comfort and Wellbeing in Passive Architecture	**3 cr.**
MAR 634	Building Simulation and Modeling	**3 cr.**
MAR 635	Case Studies in Passive Energy Design	**3 cr.**
MAR 6--	Choose one course from the other concentrations	**3 cr.**



Graduate Courses:
Degree of Master of Arts in Urban Design*
Degree of Master of Arts in Sustainable Architecture

MAP 610 Research Methodology (3.0); 3 cr. This course offers guidance to research methodologies that are required in the development of masters' level projects. The course is designed with the purpose of guiding students in the formulation of their research, developing their research design, and practicing the application of the introduced research methods.

MAR 620 Discourses on Architecture Thought (3.0); 3 cr. This course focuses on scriptures, clearances, and displacement and will be based on the 20th and 21st architectural theories and thoughts.

MAD 636 Special Topic (3.0); 3 cr. This course is given by an invited instructor to explore topics of current interest.

MAP 624 Thesis Research Proposal; 0 cr. This research proposal presents the research to be conducted as part of the program's master thesis. It includes a clear outline of the research with a title, contribution to the field of research, aim and objectives, methodologies, anticipated empirical work, and references. The proposal is subject to approval by the FGC.

MAP 690 Thesis (4.4); 6 cr. The thesis is the culmination of the work conducted through the four semesters of this Master program. It is based on one of the three main program topics, which is selected by the student. The thesis is defended in the presence of internal and external examiners. *Prerequisite:* MAP 624.

Concentration: Master of Arts in Urban Design*

MAR 611 GIS and Remote Sensing (3.0); 3 cr. This course introduces Geographic Information System (GIS) and Remote Sensing (RS) techniques and their application in urban planning. It emphasizes the spatial interactions between humans and the biophysical environment through providing students an understanding of GIS and RS fundamentals.

MAR 612 Overview on Urban Design and Planning (3.0); 3 cr. This course is meant to introduce the graduates to the various local, regional, and international approaches to Urban Design and Planning. Backed with specialized literature, the students will be exposed to case studies in Lebanon, the Arab region, Europe, and the USA. From the conventional planning methods to the multidisciplinary approaches, the course is thought of as part of a wider framework, which fosters critical thinking and innovation in the field.

MAR 613 Basic Environmental Concepts Related to Urban Design and Planning (3.0); 3 cr. The course highlights human dependence on environmental resources and ecosystem services, impacts of anthropogenic factors on living resources, and the interactions and links between the natural and built environments. It introduces students to implementation procedures of Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) and the application of participatory planning.

MAR 614 Urban Development and Regeneration (3.0); 3 cr. The course focuses on urban regeneration as a type of urban development and planning concerned with ameliorating areas of urban decline, primarily in post-industrial contexts of economic restructuring, but also in post-conflict situations.

MAR 615 Urban Transportation Systems (3.0); 3 cr. This course is an introduction to the concepts and issues in transportation planning. The course also includes land use and transportation interaction, transportation finance, environmental and planning regulations in the transportation sector, introduction to transportation economics and congestion pricing, and the impact of new technology on transportation systems.

MAR 616 Urban Public Spaces (3.0); 3 cr. This course provides a critical understanding of the nature and state of public spaces as seen from various perspectives. It is based on debates related to the philosophical, social, economic, environmental, urban design, and urban planning aspects of public spaces. This course enables students to broaden their understanding of public spaces and their significant role in the urban context.

Concentration: Master of Arts in Sustainable Architecture

MAR 631 Sustainable Architecture (3.0); 3 cr. The course offers a general review of the impact exerted by the built environment on the natural environment in terms of consumption of natural resources and disposal of waste. It then presents the concepts and principles of sustainable development and sustainability as a paradigm shift. This will be explored holistically by analyzing the three dimensions of sustainability in the field of Architecture: the environmental, the social, and the economic.

MAR 632 Green Architecture for the MENA region (3.0); 3 cr. The course analyzes, through case studies, the MENA and Arab regions' climate, energy use, and thermal comfort as principal determinants of architectural forms. This will be followed by students' applications emphasizing passive energy design strategies that do not rely on mechanical means of ventilating, cooling, heating, and lighting.

MAR 633 Human Comfort and Wellbeing in Passive Architecture (3.0); 3 cr. This course will investigate topics in adaptive thermal comfort, climate responsive building elements/climate adaptive skins and innovative thermal insulation systems. It will also include building physics, climate, comfort, indoor thermal comfort, outdoor climate comfort, lighting, ventilation, etc.

MAR 634 Building Simulation and Modeling (3.0); 3 cr. This course will introduce methods to assess the energy performance of buildings using building energy simulation tools. State-of-the-art software packages are also introduced allowing students to evaluate and propose energy efficient solutions.

MAR 635 Case Studies in Passive Energy Design (3.0); 3 cr. This course focuses on the survey and analysis of vernacular and contemporary precedents to extract passive energy design solutions and their applications.

MAR

DEPARTMENT OF DESIGN

Assistant Professors: Khoury, Tarek; Shebaby, Rina.

Senior Lecturers: Akl, Salim; Chamoun, Claudine; Majdalani, Roula; Matta, Nadim.

Lecturers: El Khoury, Simona; Ibrahim, Tamara; Mikhael, Mia Maria.

Lab Instructor: Sarkis, Rita

Goals
The Department of Design provides undergraduate degrees that emphasize the educational needs of a professional designer in a comprehensive and flexible manner.

The Department of Design actively contributes to the University as well as to local, national, and international industries through its scholarly and creative activities, educational programs, and service efforts.

The BA programs offered by the Department of Design will enable students to:

- Communicate as professional designers with clients, audiences, and industries, utilizing various forms of messages while maintaining personal and professional integrity;
- Critically assess designs through research and reflection while respecting both moral and ethical issues in cultural and social contexts of local, regional, or global environments;
- Embrace the dynamic design process that reflects creativity in producing innovative and effective solutions;
- Understand and respond to a client's needs by following a design process which analyzes a problem, proposes a hypothesis, and synthesizes relevant findings before designing possible solutions; and
- Demonstrate flexibility while applying various theories from historical movements or schools of thought to support the generation of conceptual and contextual solutions.

Degrees
The Department of Design is currently offering four undergraduate degrees:

- Bachelor of Arts in Graphic Design
- Bachelor of Arts in Interior Design
- Bachelor of Arts in Fashion Design
- Bachelor of Arts in Photography*

The Department of Design offers a graduate degree:

- Master of Arts in Design

And Minors in:

- Photography*
- Graphic Design

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*Not offered at the present time

THE DEGREE OF BACHELOR OF ARTS IN GRAPHIC DESIGN

Program Description

Graphic Design is a creative and analytical process that integrates design and technology to communicate ideas and information from a client to an audience. The primary goal of the Graphic Design curriculum is to educate students to become innovators and leaders in print- and screen-related areas of professional practice.
The Graphic Design program encourages exploration through problem solving methodologies, innovative investigations, and creative research in all forms of communication. The program is dedicated to excellence in teaching, academic and creative research, and professional practice.
The BA program aims to educate graphic designers through focusing on creative and intellectual thinking, awareness of individual, social, and cultural issues in a global context, the integration of new technology, and the concern for ethical implications and the natural environment.

The Bachelor of Arts Degree in Graphic Design is a 3-year full-time program of 102 credits.

Mission

The mission of the Bachelor of Arts (BA) in Graphic Design program is to train students to acquire creative and analytical processes that integrate design and technology, to communicate ideas and information from a client to an audience, and to become innovators and leaders in print and screen related areas of professional practice. The Graphic Design program encourages exploration through problem-solving methodologies, innovative investigations, and creative research in all forms of communication. The program is dedicated to excellence in teaching, academic and creative research, and professional practice by focusing on creative and intellectual thinking, awareness of individual, social and cultural issues in a global context, the integration of new technology and the concern for ethical implications and the natural environment.

Program Educational Objectives

The BA in Graphic Design program offered by the Department of Design at the FAAD aims to:

- Provide the learner with the proper exposure to foster a reflective approach to design and enhance critical thinking;
- Develop the intellectual and theoretical backgrounds of students through the study of ancient, modern, and contemporary history and theories of Graphic Design;
- Increase student awareness with respect to social issues, cultural and global themes, and awareness of the individual; and
- Prepare the learner for professional practice.

Learning Outcomes

Graphic Design graduates will:

- Develop design and communication skills;
- Practice critical thinking in design research;
- Relate cultural and historical knowledge to problem-solving;
- Implement design solutions related to client needs and social issues;
- Manage design projects including various variables; and
- Appraise professionally and ethically the requirements of clients and the project.

Graduation Requirements

To receive the degree of Bachelor of Arts in Graphic Design, a student must complete a total of 102 credits with an overall GPA of at least 2.0/4.0. All major courses with a grade of less than "C" must be repeated. The 102 credits necessary for graduation are divided as follows:

Degree Requirements (102 credits)

Liberal Arts Core Curriculum (LAC)	**27 cr.**
Core Requirements GDP 213, GDP 214, GDP 319	**9 cr.**
Major Requirements GDP 217, GDP 223, GDP 227, GDP 317, GDP 318, GDP 321, GDP 322, GDP 323, GDP 324, GDP 325, GDP 361, GDP 362, GDP 412, GDP 413, GDP 415, GDP 416, GDP 423, GDP 463, GDP 464, GDP 465.	**60 cr.**
Free Electives	**6 cr.**

Students interested in becoming entrepreneurs and growing their business ideas are advised to take the following course as a free elective:
ENT 302 Entrepreneurship: Launching New Ventures.

Students interested in pursuing an MBA are advised to take two of the following courses as free electives:
MGT 630, MRK 620, PRM 625, PRM 635 or PRM 645.

Note that these courses will be counted towards obtaining the MBA degree.

Minor in Graphic Design (18 credits)

This minor focuses on Typography in Graphic Design; students will develop a critical eye, and demonstrate proficiency in applying "type" to express clear and legible communication for different media. Students are qualified to manage a design project, and prepare and supervise for final production thereby enabling them to have additional work possibilities.

All students, except those already studying Graphic Design, may take the minor; the only prerequisite is prior knowledge of Photoshop.
The courses are carefully chosen from the major, in order for students to arrive at a sufficient level of skills that allow them to produce design projects in print. As such, this minor does not contain any electives.

In order to challenge students, courses with strong conceptual and creative processes are included:

GDP	223	Fundamentals of Typography	3 cr.
GDP	227	Digital Media I	3 cr.
GDP	321	Visual Communication	3 cr.
GDP	322	Applied Typographic Design	3 cr.
GDP	413	Print Management and Production	3 cr.
GDP	415	Branding for Design	3 cr.

Career Opportunities

The program will prepare students to join the industry as creative directors, art directors, art production managers, brand identity designers, multimedia designers, interaction designers, publication designers, packaging design experts, and new media designers for apps.

Undergraduate Courses: Graphic Design

GDP 212 Design principles I (2.2) 3 cr. Various design elements are introduced such as line, shape, plane, texture, color, style and composition. The students are encouraged to be creative and develop individual style.

GDP 213 Digital Sketching for Graphic Design (0.6); 3cr. This course is an introduction to analogue media, sketching with pencil on paper and digital media using up-to-date computer tools, hardware, and software. The students will learn how to visualize their ideas for different graphic outputs.

GDP 214 Fundamental of Graphic Design (1.4); 3cr. This course explores the fundamental principles of graphic design and looks at structures ranging from point, line, shape, and plane to scale, hierarchy, transparency, grid development, and image manipulation with typography. These are foundational skills that lay out the elements of a visual language.

GDP 217 Conceptual Communication in Digital Media (2.2); 3 cr. Students will learn the process of generating creative ideas, and how to apply principles of design to conceptual communication. In parallel, students are introduced to the fundamental tools to produce vector and raster-based graphics through the use of latest software for graphic production. Projects and assignments will focus on the exploration of concepts and implementation through digital media.

GDP 223 Fundamentals of Typography (2.2); 3 cr. Students will learn how to classify type according to its history and development, type measurements, and a series of exercises exploring space, hierarchy, order, kerning, tracking, type size and weight. Furthermore, the students will explore the use of type and space together with the development of grids through the application of design to a variety of formats. *Prerequisite:* GDP 217.

GDP 227 Digital Media I (0.6); 3 cr. This course is designed to help graphic designers master professional studio techniques including photo-montage, photo retouching and special photographic effects. It also covers the fundamental software tools and techniques to produce publications and prepare the end product for printing process. *Prerequisite:* GDP 217.

GDP 318 Info Graphics (1.4); 3 cr. This course is an introduction to creating info-graphics, data visualizations, and environmental graphics for print and screen based solutions. The students will transform raw information into a visual model capable of communicating to a specific audience. Combining discussion and hands-on tool learning, this will cover basic design considerations, storytelling, and solid foundation for building info-graphics. Info-graphics work visually - conveying complex information instantly and persuasively, on the page or on a screen. *Prerequisites:* GDP 223 and GDP 227.

GDP 319 Color for Graphic Designers (0.6); 3 cr. This course is an introduction to color using digital and traditional tools. The course will cover perceptual understanding of color and its use as a communication medium for Graphic Designers in different contexts. *Prerequisites:* GDP 223 and GDP 227.

GDP 317 Digital Media II (0.6); 3 cr. This course concentrates on training design students to produce graphic solutions for online environments. Terminology, theory, structure, HTML basics, and appropriate software tools for web design will be covered, enabling the students to design websites. Students will also be exposed to the process of conveying a message

in motion and how it interacts within the website. *Prerequisite:* GDP 227.

GDP 321 Visual Communication (1.4); 3 cr. Students will learn how to approach conceptual problem solving through the use of visual rhetoric and the science of semiotics. The course will also focus on signs and symbols, ideograms, sequential design, publication, and information design whilst taking into consideration the potential audience. *Prerequisites:* GDP 223, GDP 227.

GDP 322 Applied Typographic Design (1.4); 3 cr. Students will explore projects of greater complexity, learn how to analyze substantial data, appreciate the design functions of relating ideas, and develop logical structural systems to organize information for legible and clear communication. Students will be able to transform manuscripts into printed publications, i.e. book designs, newspapers, magazines, and instruction manuals. They will have to follow a design process to assess typographical text application, expression, hierarchy, sequential design, layout, and page systems including production. *Prerequisites:* GDP 223, GDP 227.

GDP 323 History of Graphic Design and Contemporary Issues (3.0); 3 cr. The course exposes the students to the genesis and development of graphic design in the 20th century. The students investigate the theory and practice of graphic design under the two main philosophies of the 20th century: modernism and postmodernism. The course aims to develop the students' ability to comprehend theoretically and visually the graphic design movements and pioneers as a source of inspiration and reference for their conceptual and innovative process.

GDP 324 Photography for Graphic Designers I (0.6); 3 cr. Students will be exposed to critical thinking and will learn the history of photography including the different photography movements. Students will learn the principles and use of black and white photography, its application in documentary photography and Photojournalism, along with photo editing as it applies to print. *Prerequisite:* GDP 227.

GDP 325 Sustainable Graphic Design (0.6); 3cr. This course introduces students to ideas and practice of sustainability in Graphic Design. Theories and methods are explored through a series of projects with consideration to the impact of design on the environment and culture. Students will gain an understanding of the practical aspects of green design in benefiting the local and global environment.

GDP 361 Type Design and Experimental Typography (1.4); 3 cr. Students will learn the principles of designing fonts ready for print and screen. They transfer the manually developed typeface into true type font using professional software. Furthermore, this course will provide the opportunity to experiment with type and research various methods and techniques to serve a pragmatic purpose to express ideas using type. The students will also learn how to develop a visual identity system and how to combine type with signs and symbols. *Prerequisites:* GDP 317, GDP 322.

GDP 362 Introduction to Motion Graphics (0.6); 3 cr. The course introduces the student to website history and digital interface, website structures and grids, website management, and design principles using type, image, color scheme, hierarchy, sequential design, visual identity, animation, and sound. Furthermore, students will create visual projects for screen and TV through the understanding and application of type and image. They will learn how to plan movie concepts through sketching and storyboarding and will gain knowledge on how to develop graphic soundtracks to be synchronized with motions. They will also learn the principles of creating short movies and their editing techniques. Through assigned projects, students are responsible to follow a design process in order to deliver a specific message using motion graphics. *Prerequisites:* GDP 317, GDP 322.

GDP 412 Packaging (0.6); 3 cr. Packaging is an important factor in retail environments and a key element in marketing strategies. This course focuses on the technical knowledge needed to execute a design, to prepare die-cuts, molds, paper section and boards, colors, quality, and quantity. Size consideration, shapes, and practicality will also be covered. Field trips are required in this course. *Prerequisite:* GDP 322.

GDP 413 Print Management and Production (0.6); 3 cr. This course covers print methods and print techniques including color separation, film preparation, plate processing, and the actual production process. It will also include the choice of papers, printing onto various surfaces, paper engineering, management and finishing processes, and binding. *Prerequisites:* GDP 321, GDP 322.

GDP 415 Branding for Design (0.6); 3 cr. Students will create the visual corporate identities of products, build the brand marketing strategy, analyze and define the unique selling proposal, and communicate its value. They will learn how to make professional presentations including documentation of the process. *Prerequisites:* GDP 321, GDP 322.

GDP 416 Collaborative Design for Change (0.6); 3 cr. This course will introduce students to real life projects through collaborative design works in the area of information visualization and experience design. Students will answer briefs from the industry exploring a range of possibilities in visualizing data and information as well as design elements and techniques for new technology application.

GDP 423 Professional Practice and Portfolio Preparation (0.6); 3 cr. This course is an overview of the business aspects of design and covers translation of jobs into properly written documents, meetings with clients and presentation of work, design and production processes, understanding the brief, debriefing, coding, encoding, budgets, estimating design, fees, and official contracts. During the semester, students will have to cover hours for the internship. This course also assists students in the development of their professional visual identity and portfolio. *Prerequisite:* GDP 413.

GDP 463 Environmental Graphics and Arabic Type Design (0.6); 3 cr. This course will introduce the students to the history of Arabic typography. Students will learn to identify the different Arabic type styles and their classifications, as well as applying a creative design process to produce Arabic typeface. Students are also introduced to ways of analyzing and creating meaning in graphic and typographic design solutions for indoor and outdoor environments. In the context of theory and practice, the students will develop way-finding systems, semiotics, and information presentations for the public. They will become aware of issues pertaining to the identification, categorization, and structure of raw and complex information from different fields. *Prerequisite:* GDP 361.

GDP 464 Type in Motion (0.6); 3 cr. Students will learn how to communicate effectively using type, image, and sound progressively with increasingly complex needs for motion graphics. Students will learn how to inform while underpinning the media constraints. In parallel, they will learn how to create interface design and promotional broadcasting graphic movies using different software platforms and advanced tools tracking 2D and 3D animations. Furthermore, the students are introduced to the principles of 3D animation. They will learn how to sketch, illustrate,

and design characters as well as develop contemporary design solutions with new approaches to type, image, and characters for screen using appropriate tools and techniques to develop 3D motion graphics for multimedia. Students will investigate and formulate their senior project proposal. *Prerequisite:* GDP 362.

GDP 465 Senior Studio (0.6); 3 cr. Students will research, develop, and design their individual senior project under instructor guidance. Articles, discussions, seminars, and lectures will take place during class sessions in support of the development of the senior projects. The senior project and related process will be presented in front of a professional jury. The senior project proposal can take the form of a screen- and/or print-based solution. *Prerequisites:* GDP 463, GDP 464.

INTERIOR DESIGN

THE DEGREE OF BACHELOR OF ARTS IN INTERIOR DESIGN

Program Description

The Interior Design program consists of sequential undergraduate design studios that form the core of this professional major. Basic architectural and design principles of form-making are the initial focus that soon shift to issues of people and space.

This program helps students to develop critical thinking, creative design, and evaluation of how interior design meets the needs of people, which is the essence of their professional curriculum. Within the instructional settings of the upper design studios, students learn about the dynamic interactions between people and space in commercial, institutional, hospitality, healthcare, and retail facilities. Graduates develop competency in specific interior design subject areas, as they learn how to creatively make the world a better place for others. The program provides opportunities for students to achieve excellence in the design of interior environments and also to engage in research and develop a specialization in a related field and possible topics for advanced studies in furniture design, environmental design, historic preservation, visualization, and interior applications for computers, design research, and theory as well as design education.

Mission

The mission of the Interior Design program is to prepare students to develop critical thinking and effective problem-solving approaches in both public and private spaces. The program arms students with the knowledge to find different ways to improve and develop the physical environment. The program also provides students with the means to creatively make the world a better place in which to live.

Program Educational Objectives

The Bachelor of Arts (BA) in Interior Design program offered by the Department of Design at the FAAD aims to:

- Provide the learner with the proper exposure to enhance critical thinking;
- Develop the intellectual and theoretical backgrounds of students through the study of ancient, modern, and contemporary history of interiors, furniture, and styles;
- Provide the knowledge of human factors and human behavior in the interior environment;
- Lead students to develop the attitudes and values of professional responsibility and effectiveness;
- Provide students with the basic fundamentals in interior design, the theories of design, and design sustainability; and
- Prepare the learner for professional practice and post-graduate studies.

Learning Outcomes

Interior Design graduates will:

- Develop proficiency in communication skills using strong verbal, written, and graphic methods;
- Acquire understanding of historical and theoretical influences on design;
- Demonstrate an innovative and creative approach the design process through conceptual and critical thinking;
- Employ technical skills and knowledge of materials and systems including related safety, environmental concerns, ecology, and sustainability;
- Appraise the knowledge, understanding, and skills required for a professional interior designer, as global citizen and leader;
- Initiate research to assess and develop a design project that requires service-learning skills in various cultural and social environments; and
- Manage constituent ideas to give new concepts and/or propose alternative solutions.

Career Opportunities

Students graduating in Interior Design will have the opportunity to work in a wide range of projects, such as public, commercial, and residential.
Interior designers focus on design specialties, such as designing for the hospitality or health care industries. Some designers focus on designing restaurants, residential kitchens and baths, the interiors of airplanes or yachts, or historic conservation or restoration, while others focus on designing furniture.

Graduation Requirements

To earn a BA in Interior Design, a student must complete a total of 136 credits with an overall GPA of at least 2.0/4.0.
All major courses with a grade of less than "C" must be repeated. The 136 credits necessary for graduation are divided as follows:

Degree Requirements (136 credits)

Liberal Arts Core Curriculum (LAC) **30 cr.**

Core Requirements **6 cr.**
FAP 211, GDP 212 .

Major Requirements **94 cr.**
IDP 210, IDP 211, IDP 212, IDP 214, IDP 215, IDP 222, IDP 223, IDP 224, IDP 225, IDP 226, IDP 227, IDP 311, IDP 312, IDP 313, IDP 314, IDP 321, IDP 322, IDP 323, IDP 324, IDP 326, IDP 327, IDP 328, IDP 411, IDP 412, IDP 413, IDP 421, IDP 422, IDP 423, IDP 424.

Free Electives **6 cr.**

Students interested in becoming entrepreneurs and growing their business ideas are advised to take the following course as a free elective:
ENT 302 Entrepreneurship: Launching New Ventures.

Students interested in pursuing an MBA are advised to take two of the following courses as free electives:
MGT 630, MRK 620, PRM 625, PRM 635 or PRM 645.

Note that these courses will be counted towards obtaining the MBA degree.

Undergraduate Courses: Interior Design

IDP 210 Basic Skills for Interior Design (0.6); 3 cr. This course helps the student develop the necessary skills and techniques required to communicate visually his or her interior design ideas effectively and professionally. This course will give the student the ability to draw and sketch, assess, evaluate, and understand existing structures, and also learn to survey sites and collect data and take them to the drawing board. Topics include: Design briefs and specifications; comprehensive drawing files such as presentation techniques, layouts, and renderings; and technical drawing files such as scaled drawing, plans, elevations, sections, etc.

IDP 211 History of Interiors and Furniture (3.0); 3 cr. This course is a study of ancient architecture, interiors and furniture from the beginning of human civilization to modern civilization.

IDP 212 Fundamentals of Interior I (0.6); 3 cr. The course covers the essentials of planning an interior architectural environment in relationship to spatial organization. *Prerequisite:* IDP 215.

IDP 214 Materials and Methods of Construction (2.2); 3 cr. This course combines case studies with lectures, readings and discussions on concepts of design technology. *Corequisite:* IDP 212.

IDP 215 Descriptive Geometry for Int. Design (0.6); 3 cr. This course is a study of the different interrelated geometric fields and three-dimensional forms in the interior environment. Emphasis will be given on the formation of volumetric development, light sources, shades, shadows, and their constructions. *Prerequisite:* IDP 210.

IDP 222 Fundamentals of Interior II (0.6); 3 cr. This course is a study of structural settings in any architectural space leading to constraints in the design process. *Prerequisite:* IDP 212.

IDP 223 Drawing for Interior Design (0.6); 3 cr. This is an intense studio course developing free hand drawing skills and scaled perspectives appropriate for the presentation of interior design projects. This course also develops a wide range of rendering skills and techniques applicable in traditional and computer media. *Prerequisite:* FAP 211.

IDP 224 Colors in Interiors (1.4); 3 cr. This course will teach the student to achieve the right choices of colors in different interior spaces and environments, and they will also learn to develop the opulent designer's eye when required to balance color schemes and combinations. Topics included: color theories, color psychology, color science, color characteristics, and notation. *Corequisite:* IDP 226.

IDP 225 Materials and Finishes (3.0); 3 cr. This course offers an introduction to construction detailing for interiors, focusing on architectural millwork. *Corequisite:* IDP 222.

IDP 226 Textiles for Interiors (1.4); 3 cr. This course covers the effects of fibers, yarns, fabrics, and finishes on appearance and performance. It will also study the construction of textile products used in interiors. *Prerequisite:* IDP 222.

IDP 227 Human Factors for Int. Des. (3.0); 3 cr. This course investigates human factors as an essential ingredient in the design process. Physical and psychological human factors will be examined in an attempt to better understand the spatial relationship between humans and their environment. Topics include: proxemics, cognitive mapping, image ability, human senses, and ergonomics. *Corequisite:* IDP 222.

IDP 311 History of Modern Contemporary Interiors (3.0); 3 cr. This course is an overview of the 20th century art, culture, interiors and furniture. *Prerequisite:* IDP 211.

IDP 312 Interior Design Project I (0.6); 3 cr. This course covers the creative trigger of the design problem-solving process through schematics. It also investigates human factors as an essential ingredient in the design process. *Prerequisite:* IDP 222.

IDP 313 Applied Interior Design I (0.6); 3 cr. This course explores the pragmatics of computer hardware and software as integral tools to contemporary design. *Prerequisite:* IDP 210.

IDP 314 Interior Detailing and Construction I (0.6); 3 cr. The course introduces the students to the various material finishes used in interior design. *Corequisite:* IDP 312.

IDP 321 Environmental Graphic Design (1.4); 3 cr. This course studies the presentation of information in the designed environment. *Prerequisite:* IDP 322.

IDP 322 Interior Design Project II (0.8); 4 cr. The student is challenged to work on a major construction displaying creativity and ability to remodel this space according to new functions. *Prerequisite:* IDP 312.

IDP 323 Applied Interior Design II (0.6); 3 cr. This course develops a more professional and creative approach to design while broadening the student's technical base. *Prerequisite:* IDP 313.

IDP 324 Interior Detailing and Construction II (0.6); 3 cr. This course will be based on the review, discussion, and analysis of interior construction systems used in commercial and institutional structures. *Prerequisite:* IDP 314.

IDP 326 Concepts of Historic Preservation (2.2); 3 cr. Projects In this course will consist of a search for new remodeling techniques, constructing, and preserving historic buildings and monuments. *Prerequisite:* IDP 322.

IDP 327 Furniture Design (0.6); 3 cr. This course exposes the student to the design industry starting from the drawing board and ending with a full-scale furniture model. The student will learn to implement the step-by-step, hands-on model making of furniture pieces that he or she creates, using the ergonomic knowledge learned in the human factors course. Topics included: ergonomic design for the global industry, designing for the industry, model making, specimen building, and mass production. *Prerequisite:* IDP 227.

IDP 328 Lighting Design in Interiors (2.2); 3 cr. This course takes a practical approach to lighting, and the student will learn about the different types of lighting such as ambient, task, and decorative. The student will also learn the fundamentals of lighting design in relation to residential and contract interiors. The subjects tackled in this course will give the student enough knowledge to incorporate lighting in the total interior design scheme. Topics covered: natural, artificial lighting, quality of light. Technicalities: switches and wiring. Finally, electrical plans and specifications are also included. *Corequisite:* IDP 322.

IDP 411 Quantity Surveying for Interior Designers (3.0); 3 cr. This course will emphasize the principals of construction. *Corequisite:* IDP 412.

IDP 412 Interior Design Studio I (0.12); 6 cr. This course covers all aspects of professional presentation of a complete construction drawing-file to secure accurate executions. *Prerequisite:* IDP 322.

IDP 413 Applied Interior Design III (0.6); 3 cr. This course shows students how to create computer animation and 3D-rendered materials within an interior space. *Prerequisite:* IDP 323.

IDP 421 Business Practice for Interior Designers (3.0); 3 cr. This course focuses on the legal aspects of design and contract

documents for interior architecture. *Corequisite:* IDP 422.

IDP 422 Interior Design Studio II (0.12); 6 cr. This course is structured to challenge the student to deal specifically with contract interiors. *Prerequisite:* IDP 412.

IDP 423 Integrated Building Systems (HVAC and Plumbing) (1.4); 3 cr. This course provides a structured opportunity to study and integrate all components of architectural technology into a comprehensive whole. *Corequisite:* IDP 412.

IDP 424 Interior Design Management (3.0); 3 cr. This course exposes the student to the main management principles in interior design with the understanding that this profession is an integral part of the construction industry. The student will learn the different management techniques and skills that an interior designer needs to practice in his or her business formation starting with manning his or her office, ending up with a contract, and passing by all the processes that require a business-like attitude. Finally, the student will learn the design-built team working approach. *Corequisite:* IDP 422.

FASHION DESIGN

THE DEGREE OF BACHELOR OF ARTS IN FASHION DESIGN

Program Description
Lebanon has already established itself in the international fashion design industry; as a result, there is vast potential for a thriving local market in need of competent fashion designers. Graduates will be able to produce traditional as well as innovative and contemporary design concepts suitable for the national, regional, and international market. This program combines advanced design concepts supported by current technology to produce creative and original individual prototypes for haute couture or industrial production.

Career Opportunities
Fashion Design graduates will be ready to work in the fashion industry as creators of new collections, textile designs, managers, journalists, patternmakers, and in various fields of fashion commerce.

Mission
The mission of the Bachelor of Arts (BA) in Fashion Design is to train students in critical and creative thinking through visual communication in fashion design illustrations, studio, and patternmaking, and to expand student awareness of research, history, trends, concepts, and marketing in fashion design.

Program Educational Objectives
The BA in Fashion Design offered at the FAAD aims to:
- Provide the learner with the exposure to reflective approaches to design and critical and creative thinking;
- Develop the intellectual and theoretical backgrounds through study of history, trends, concepts, and marketing in fashion design; and
- Develop the technical skills in professional fashion design, such as patternmaking, visual communication, and analysis.

Learning Outcomes
Fashion Design graduates will:
- Develop visual communication skills, such as professional illustrations and technical drawings;
- Practice critical and creative thinking in fashion design;
- Relate history and cultural knowledge to fashion design, and communicate the ways fashion reflects cultural, political, and humanistic issues;
- Relate silhouettes, color, fabric, details, and styling to the design concept; and
- Propose appropriate marketing plans guided by research, market trends, and marketing concepts.

Graduation Requirements
To receive a BA in Fashion Design, a student must complete a total of 102 credits with an overall GPA of at least 2.0/4.0. All major courses with a grade of less than "C" must be repeated. The 102 credits necessary for graduation are divided as follows:

Degree Requirements (102 credits)

Liberal Arts Core Curriculum (LAC) **30 cr.**

Core Requirements **3 cr.**
FAP 211.

Major Requirements **63 cr.**
FTP 212, FTP 214, FTP 222, FTP 224, FTP 226, FTP 228, FTP 229, FTP 314, FTP 315, FTP 319, FTP 325, FTP 326, FTP 328, FTP 329, FTP 415, FTP 418, FTP 419, FTP 423, FTP 425, FTP 428, FTP 438.

Free Electives **6 cr.**

Students interested in becoming entrepreneurs and growing their business ideas are advised to take the following course as a free elective:
ENT 302 Entrepreneurship: Launching New Ventures.

Students interested in pursuing an MBA are advised to take two of the following courses as free electives:
MGT 630, MRK 620, PRM 625, PRM 635 or PRM 645.

Note that these courses will be counted towards obtaining the MBA degree.

Undergraduate Courses: Fashion Design

FTP 212 Fashion Illustration I (0.6); 3 cr. Students will learn to develop and illustrate fashion figures and garment details through analysis of the fashion canon, the figure research, and the study of lines and proportions resulting in fashion design sketches and illustrations. The emphasis is on the ability to express ideas visually and in a personal style. *Corequisite:* FAP 211.

FTP 214 Textile Technology (0.6); 3 cr. This course is an overview of the textiles in fashion design including printing techniques. Advanced surface treatments are also investigated, and students are encouraged to experiment and apply original designs as inspiration for textile creation.

FTP 222 Fashion Illustration II (0.6); 3 cr. The students will explore the different techniques for illustrating fashion and analyzing the structural rhythm and movements of various poses by combining media and advanced rendering techniques. The course will also cover software used in the fashion industry leading to new fashion design creations. *Prerequisite:* FTP 212.

FTP 224 History of Fashion Design (3.0); 3 cr. This course traces the history of fashion tradition from antiquity until 1890, including the ancient civilizations of Egypt, Mesopotamia, Greece, Rome, and continuing with the Renaissance, the French Revolution until the Art Nouveau Period. *Prerequisite:* ENL 110.

FTP 226 Digital Fashion Design (0.6); 3 cr. The student is introduced to digital technologies such as Adobe Photoshop and Illustrator through applications in design principles. The course will also include illustration and presentation techniques as well as fashion idea development from the basis of this course including web and computer portfolios. *Corequisite:* FTP 229. *Prerequisite:* FTP 222.

FTP 228 Patternmaking I (0.6); 3 cr. Students will study the use of patterns for various sectors while developing basic concepts as well as original designs according to professional standards through hands-on practice. *Corequisite:* FAP 211.

FTP 229 Fashion Design I (0.6); 3 cr. The students will learn to develop fashion designs in parallel with sketching figures and garment details through analysis of photographs and research, resulting in fashion design sketches. The ability to design through creative exploration is an integral part of the course. Techniques for rendering the characteristics of various fabric textures, weights, and patterns will be explored. *Corequisite:* FTP 222.

FTP 314 Contemporary Issues of Fashion Design (3.0); 3 cr. The students will investigate the relationship between fashion design and the contemporary issues of the 20th and 21st centuries, beginning with the Art Nouveau period, the "between the two Wars" period, the New York era, innovations of the 20th century, and finally the contemporary era. *Prerequisite:* FTP 224.

FTP 315 Fashion Studio I (0.6); 3 cr. Students will work on creating their own concepts for designs and finished garments, strengthening their understanding of cutting, construction, and tailoring techniques.

FTP 319 Fashion Design II (0.6); 3 cr. The students will continue to develop creative concepts in fashion design illustrations and presentation boards through exposure to software used in the fashion industry. This process is explored both manually and digitally. *Prerequisite:* FTP 229.

FTP 326 Fashion Trends and New Concepts (3.0); 3 cr. Students will explore the concepts and trends that add glamour to fashion design through various resources, such as the "Tendance" of the professional forecasting services. Students will focus on details such as accessories in new dimensions and materials, thus enhancing their creative potential. *Prerequisite:* FTP 314.

FTP 325 Fashion Studio II (0.6); 3 cr. Students will develop skills and techniques necessary to produce garments of various sectors, including professional processes and assembly procedures. *Prerequisites:* FTP 315, FTP 228.

FTP 328 Patternmaking II (0.6); 3 cr. The students will learn to create advanced patterns using computer and appropriate software as tools for production in order to efficiently reflect and execute their creative and original ideas. *Prerequisites:* FTP 228, FTP 315.

FTP 329 Fashion Design III (0.6); 3 cr. Creative thinking in both process and product will encourage the students to create trade sketches and storyboards of their fashion designs. The aim of the course is to develop cohesiveness in a collection based on individual concepts with diverse applications and to present the designs in fashion portfolios. *Prerequisite:* FTP 319.

FTP 415 Fashion Studio III (0.6); 3 cr. The students will continue to employ industrial standards for tailoring garments, including advanced construction processes and assembly procedures to ensure a high quality garment. *Prerequisites:* FTP 325, FTP 328.

FTP 418 Patternmaking III (0.6); 3 cr. The students will master the translation of any volume or idea regardless of material or purpose. Students will further construct in tandem, manually and digitally, advanced patternmaking for final execution. *Prerequisites:* FTP 328, FTP 325.

FTP 419 Fashion Design IV (0.6); 3 cr. Creative and advanced design methodology will ensure unique and professional development of a collection with personal style and effective communication of sketches, fashion design, storyboards, and portfolios for their senior collection. *Prerequisite:* FTP 329.

FTP 423 Professional Practice and Marketing (3.0); 3 cr. The students will be exposed to the professional aspects of fashion design: management of inventory, decision making, planning, licensing, and strategies to enhance market strength. The process of learning happens through daily journaling, written reports, and a presentation of their internship experience. It is the student's responsibility to find an internship and to notify the instructor for approval. Furthermore, the students will design, prepare, and present a professional portfolio of their individual collections including the senior project. *Prerequisites:* FTP 415, FTP 329.

FTP 425 Fashion Studio IV (0.6); 3 cr. Students will apply professional standards to the execution of their senior collection and its process will be presented in front of a jury in order to develop high quality prototypes. *Prerequisites:* FTP 415, FTP 418.

FTP 428 Patternmaking IV (0.6); 3 cr. The concepts developed through design and research will inform the patternmaking for a collection as their senior project resulting in professional execution. *Prerequisites:* FTP 418, FTP 415.

FTP 438 Senior Collection Execution (0.6); 3 cr. This course supports the culmination of knowledge and skills where students are encouraged and expected to further develop different methodologies for creating patterns and executions for their Final Collection, including various levels of "Finishing Effects" within the fashion industry: Haute Couture, New Designs, and Ready-to-wear. Special attention is given to the various "drapery" techniques. *Prerequisites:* FTP 419, FTP 425, FTP 428.

PHOTOGRAPHY

THE DEGREE OF BACHELOR OF ARTS IN PHOTOGRAPHY*

Program Description
Photography is by far the most common medium amongst all the creative disciplines. From fine arts and design to multimedia, artistically and commercially, the photograph has proven its strength and ability to deliver various messages in an innovative and challenging process.

The Design Department approaches photography as a multidisciplinary medium devoted to research and experimentation. The Photography program encourages the exploration and development of individual style in a project-based system where initiative, research, and analytical thinking underlie each task.

The BA in Photography offers students the opportunity to learn photography combined with animation, multimedia, video, and other related fields. Students are invited to combine traditional and contemporary methods to create photographs, including still and moving images as well as image and text.

Graduates will develop a strong learning while tackling all the areas of the photography industry, enabling them to pursue a promising career in their field of interest.

Career Opportunities
Students graduating in Photography will have the opportunity to work as freelancers, covering the creative and artistic needs of the market, such as advertising, editorial, fashion, and documentary. They can also work as creative directors, image consultants, and photojournalists. In parallel to their commercial work, graduates will be capable of setting up their own exhibitions and publishing their work.

Mission
The Bachelor of Arts (BA) in Photography offers students the opportunity to learn photography combined with animation, multimedia, video, and other related fields. Students are invited to combine traditional and contemporary methods to create photography, including still and moving images as well as image and text. Graduates will develop a strong knowledge base while tackling all the areas of the photographic industry, enabling them to pursue a promising career in commercial and fine art photography, or other visual communication fields.

Program Educational Objectives
The main objectives of a major in Photography offered at the FAAD are to:

- Familiarize students with the different genres of photography, its history, and its contemporary form;
- Equip students with the necessary skills, knowledge, and ethical dispositions to excel in the photography industry;
- Prepare professionals who will be capable of working in the fields of visual communications; and
- Raise students' awareness to the multidisciplinary aspect of the photograph and its various forms of publication.

*Not offered at the present time

Learning Outcomes
Photography graduates will:

- Demonstrate fundamental understanding of the critical theory, historical, and contemporary practice of art and photography;
- Produce a high-quality, technically relevant, and coherent body of work to a professional standard in any chosen area of photography;
- Communicate various concepts proficiently and contextualize creative work in the contemporary culture;
- Effectively adapt multimedia, design, and branding techniques in creative photographic projects; and
- Adopt a moral and ethical approach to the use of photography.

Degree Requirements (102 credits)

Liberal Arts Core Curriculum (LAC) **30 cr.**

Core Requirements **9 cr.**
FAP 211, GDP 214, FAP 215.

Major Requirements **57 cr.**
PDP 216, PDP 221, PDP 223, PDP 227, PDP 311, PDP 312, PDP 313, PDP 317, PDP 321, PDP 323, PDP 327, PDP 411, PDP 412, PDP 413, PDP 414, PDP 415, PDP 421, PDP 422, PDP 423.

Free Electives **6 cr.**

Students interested in becoming entrepreneurs and growing their business ideas are advised to take the following course as a free elective:
ENT 302 Entrepreneurship: Launching New Ventures.

Students interested in pursuing an MBA are advised to take two of the following courses as free electives:
MGT 630, MRK 620, PRM 625, PRM 635 or PRM 645.

Note that these courses will be counted towards obtaining the MBA degree.

Minor in Photography* (18 credits)

This minor is ideal for students who believe in the alchemy of the still image and its creative and inspiring process. Out of all the visual communication media, photography stands out in its power to freeze time and capture the essence of the real. Used in every discipline, it manages to travel through the eye to reach the mind and engrave its codes on the heart. New digital technologies and traditional techniques are merged here to offer pioneering creative methods in this challenging field.
Students who choose this minor will acquire solid analytical, intellectual and technical skills necessary for the development of a consistent photographic body of work.
This minor aims to enrich the lives of students by introducing them to a creative medium and equipping them with sufficient skill to produce solid work.

Courses

PDP	201	Basic Photography	3 cr.
PDP	227	Grain to Pixel	3 cr.
PDP	311	Branding in Photography	3 cr.
PDP	312	Glamour and Fashion	3 cr.
PDP	321	Photojournalism and Documentary	3 cr.
PDP	323	Time and space	3 cr.

Career Opportunities
Students can work as freelancers responding to the creative and artistic needs of the market such as advertising, editorials, fashion, and documentaries. They could also work as creative directors and photojournalists.

Undergraduate Courses: Photography*

PDP 201 Basic Photography (0.6); 3 cr. The course will focus on the camera, dark room, film, and processing. Students will learn about basic techniques of exposure, lighting and laboratory.

PDP 216 Introductory Photography (0.6); 3 cr. Students will develop a strong basis for the creation of the image while exploring digital and analog techniques that will enable them to express their own ideas visually. They will explore several photographic topics and represent them through various concepts and techniques.

PDP 221 Portraiture (0.6); 3 cr. Students will develop individual ideas through an understanding of the photographic portrait, including past and present representation of the self and the other. An interpretation of the facial representations and body language is expressed through analog and digital techniques. *Prerequisite:* PDP 216.

PDP 223 History of Photography (3.0); 3 cr. This course gives an overview of the history of photography starting from the pioneers' era in the beginning of the 19th century until the mid-20th century. It will cover the influence of science and technology in the creation of the image, as well as the challenge between painters and photographers. *Prerequisite:* PDP 216.

PDP 227 Grain to Pixel (0.6); 3 cr. Students will learn how to handle and manipulate digital images for diverse outcomes. They will be introduced to professional software for image retouching, montages, collage, and special effects. *Prerequisite:* PDP 216.

PDP 311 Branding in Photography (0.6); 3 cr. Students will learn to analyze a brand and target a given audience. They will be exposed to the process of how to deconstruct the commercial image through the development of a brief: research, concept, to image creation. Through photography students will learn to communicate successfully the image identity of a brand. *Prerequisite:* PDP 227.

PDP 312 Glamour and Fashion (0.6); 3 cr. This course emphasizes creativity and originality in the production of the fashion image and the ability to transmit the stylistic concept is an integral part of this course. Students will learn to manage the team necessary for glamour shooting, whether in the studio, outdoors, or during catwalk. *Prerequisite*: PDP 227.

PDP 313 Contemporary Photography (3.0); 3 cr. This course will cover photography from the beginning of the 20th century until present day. It will introduce critical and cultural theories pertaining to the contemporary image, including multimedia and the digital era. *Prerequisite:* PDP 223.

PDP 317 Line to Pixel (0.6); 3 cr. Students will master the manipulation of digital images in a variety of media. They will be introduced to different software in relation to design and publications, enabling the students to produce professional printed matter. *Prerequisite:* PDP 227.

PDP 321 Photojournalism and Documentary (0.6); 3 cr. Students will be aware of the responsibility and integrity of the photographer in capturing the moment and producing striking photographs. They will analyze the photograph in relation to various media while objectively addressing ethical and social issues and grasping a deeper insight into the ambiguity of the message. *Prerequisite:* PDP 312.

PDP 323 Time and Space (0.6); 3 cr. Students will analyze the cultural meaning of a certain space or place and the signs held within its image. The architectural elements and methods for visual investigation will be explored through the quality and quantity of light in conveying different moods. *Prerequisite:* PDP 312.

PDP 327 Web Image (0.6); 3 cr. Students will learn the structure of websites for clients and for self-promotion that reflect the genre of their work while understanding and analyzing creative websites used by professional photographers. *Prerequisite:* PDP 317.

PDP 411 Image and Type (0.6); 3 cr. Students will understand and analyze different typefaces and the relation between a specific image and expressive typefaces, as well as the different messages that type and image can convey. They will experiment with their own photographs and produce design solutions for various publications. *Prerequisite:* PDP 327.

PDP 412 Experimental Photography (0.6); 3 cr. This course will offer a survey of contemporary experimental photography, emphasizing past and present methods. Students will create original and unique images through the exploration and application of alternative techniques. *Prerequisite:* PDP 321.

PDP 413 Senior Project I (0.6); 3 cr. Students will investigate and formulate their senior project proposal. They will determine the subject matter and concepts after researching and analyzing the disciplines in which their own practice is located. Dissertations will be submitted and approved by a jury of academics and professionals. *Prerequisite:* PDP 321.

PDP 414 Movie Production (0.6); 3 cr. This course aims to acquaint the student with multi-camera usage in a studio setting and on location, combining photography and moving image towards movie production. The common language of the contemporary moving and still image is explored through the concepts of storyboarding, directing, and digital editing techniques. *Prerequisite*: PDP 327.

PDP 415 Photography and Animation (0.6); 3 cr. Students will experiment with different processes and techniques to produce an animation, including stop-motion, using related software. Students will develop concepts and ideas through sketching and storyboarding, enabling them to produce animation and synchronized soundtracks. *Prerequisite:* PDP 327.

PDP 421 Promotion and Publication (0.6); 3 cr. Students will be exposed to the process of promoting their own work through exhibitions, installations, and publications, locally and internationally. They will be responsible for managing and organizing professionally all the preparations needed for a successful promotion. *Prerequisite:* PDP 413.

PDP 422 Professional practice and portfolio (0.6); 3 cr. This course aims to acquaint the student with developing their professional portfolio for self-promotion. In parallel, students will be exposed to the legal issues related to the copyright of the image and the way to protect their rights as professional photographers. *Prerequisite:* PDP 413.

PDP 423 Senior Project II (0.6); 3 cr. Students will develop their set objectives and produce their senior project in photography under instructor guidance. Articles, discussions, seminars, lectures, and fieldtrips will take place, supporting the development of the senior projects. The senior project and related process will be presented in front of a professional jury. *Prerequisite:* PDP 413.

Other Design Courses

FAP 101 Introduction to Music and Art (3.0); 3 cr. This course introduces students to techniques and representative works in the music and arts of various periods.

FAP 201 Intro to Painting (2.2); 3 cr. This course introduces the student to different materials of painting, construction, composition, and paint handling.

FAP 203 Intro to Ceramics (0.6); 3 cr. This course will allow the students to build forms from clay using basic hand building techniques and the potter's wheel.

FAP 211 Drawing I (0.6); 3 cr. This course will encourage eye and hand coordination, developed through the use of different drawing techniques.

FAP 214 Performing Arts and Music (2.2); 3 cr. This course is designed to enhance students' creativity in discovering the fields of theater, dance, and music.

FAP 215 Art and Culture (1.4); 3 cr. The course focuses on how artworks reflect the culture, the societies, and the times. Students will learn to see, analyze, and understand the works of art in relation to their relevant context. This course will be organized thematically and will explore modern issues from historical, cultural, and social perspectives.

FAP 221 Drawing II (0.6); 3 cr. Drawing is encouraged in this course through observation and application. The human figure is considered in relation to the environment. *Prerequisite:* FAP 211.

FDP 201 Basic Design (0.6); 3 cr. This course introduces students to the basics of visual expression and organization. *Prerequisite:* Sophomore Standing.

FDP 214 Design for Advertising (0.6); 3 cr. This course is designed for the Communication Arts students. It emphasizes both the functional and the aesthetic aspects of design. *Prerequisite:* FDP 201.

DESIGN

THE DEGREE OF MASTER OF ARTS IN DESIGN

The Master of Art (MA) in Design program is designed for students of Visual Arts and Design who wish to engage in a further period of study as a continuation of their Bachelor studies. It is also designed for experienced students who wish to raise their intellectual and professional experience in a field of study, following a period of work in the industry or professions associated with design.

The postgraduate status of the master's program derives from the emphasis given to the relationship between theoretical concepts and practical realization of a problem: theory and practice at an informed and exploratory level.

The postgraduate status also derives from a teaching approach, which lays considerable emphasis upon the managerial and professional aspects of project research and development, designed to raise the standards of the successful implementation of the subjects in the professional, applied context of society and industry.

Finally, the postgraduate status of the course allows students to disengage from the daily pursuit of tasks in their field, which are normally carried out under constraints that limit their exploration of the subject in a holistic sense. Instead, students are enabled to look deeply into the context of their work, the history, theory, practice, and achievement of national and international specialists on a global scale.

The impacts of traditional, new, and developing technologies are studied. Graduates of the course can keep abreast of current trends by providing themselves with the intellectual network and contacts necessary to remain fully informed throughout their future professional lives, a benefit to themselves and their employers.

MA students are able to follow their intellectual and creative discoveries to a depth and distance which will give the opportunity to create pilot schemes and projects that can be developed in the true scientific manner of trial and error: testing, revision, and proposals for further development. Thus, building a body of knowledge on their subject provides the basis for further pioneering and exploratory work, creatively and technically.

The program aims to:

- Extend and further develop the intellectual, professional and technical skills of graduates and of mid-career practicing designers;
- Explore the social and cultural context within which the processes of designing takes place; and
- Support the individual in developing high-level research abilities and to explore the interrelationship of theory and practice.

Admission Requirements

The MA in Design is set for students from the several disciplines that are embraced by the term "visual arts and designs" who wish to engage in a period of study beyond the BA level and raise their intellectual and/or professional experience associated with visual arts and/or design.

Students with bachelor's degrees from other disciplines are invited into the program after they have fulfilled undergraduate requirements of the University admissions policy.
In addition to the University admission requirements for graduate students, the candidate must submit a portfolio of work for assessment and schedule an interview with the MA course Faculty.

In order to be accepted into the program, students must take a minimum of 6 credits per semester as a part-time candidate and 9 credits as a full-time candidate.

Transfer
Although transfer is not generalized, some credits from major universities can be transferable upon admission by the Graduate Committee. A transferred course must be passed at the grade of 80, according to the University Grading Bylaws.

In addition, applicants for the graduate program may be granted a maximum of nine transfer credits of graduate studies taken at another accredited institution of higher education provided that the transfer course(s) correspond to the NDU course requirements.

Graduation Requirements
Students seeking the degree of Master of Design must meet the University graduation requirements and complete 36 credits. The minimum passing grade of a graduate course is C. Students in graduate studies are required to maintain a cumulative GPA of at least 3.0/04 in all courses taken for graduate programs with no more than 2 Cs per program.

Degree Requirements (36 credits)

Major Courses **36 cr.**
MAD 615, MAD 616, MAD 617, MAD 625, MAD 626, MAD 627, MAD 635, MAD 636, MAD 645.

Graduate Courses: Master of Arts in Design

MAD 615 Design Research Methodologies (2.2); 3 cr. The course is based on a survey of current design thinking and research methodologies to aid the student in the development of projects in response to a critical content framework. The course is intended to offer the student support and direction in the formation of the critical thinking that will inform their written and visual solutions. It includes lectures, readings, and discussions of contemporary issues in design in social and cultural contexts.

MAD 616 Contemporary Issues in Design (2.2); 3 cr. This is a seminar-based course in which topics of current relevance to design practice and critical thinking will be explored and analyzed. The course content will change each semester to remain up-to-date within the profession.

MAD 617 Design Studio I (2.8); 6cr. This course is based on design projects in response to the critical content of Contemporary Issues in Design. It includes the role of designed objects in contemporary culture and the effect on society, including interaction with potential audiences. *Corequisite* and/or *Prerequisite:* MAD 616.

MAD 625 Design Research Development (2.2); 3 cr. The course covers the development of conceptual and analytical skills for the self-initiated design research, which will culminate in a written proposal. *Prerequisite:* MAD 615.

MAD 626 Cultural Issues in Design (2.2); 3 cr. This is a seminar-based course that will consider the relevance of culture to design, particularly in the Lebanese context. It is an introduction to recent theories in various disciplines concerning the cultural understanding of design. The course content will change each semester to remain up-to-date within the profession. *Prerequisite:* MAD 616.

MAD 627 Design Studio II (2.8); 6 cr. The course will adopt a visual application of the topics and ideas covered in Cultural Issues in Design. The course is a platform for experimentation and exploration of concepts from the seminars. It focuses on the role of design objects as cultural artifacts and their reflection of social diversity on both designers and audience. It includes the creation, reproduction, distribution, and reception of messages. *Corequisite* and/or *Prerequisite:* MAD 626.

MAD 635 Thesis I (2.2); 3 cr. This course will support and assist the student in the development and preparation of their research into a comprehensive written document that will complement the visual work to be undertaken in Thesis II. The two components will interrelate to support the theories, hypothesis, and conclusions. *Prerequisite:* MAD 627.

MAD 636 Special Topic (2.2); 3 cr. This course is given by an invited instructor to explore topics of current interest. *Prerequisite:* MAD 627.

MAD 645 Thesis II (4.4); 6 cr. The course provides further guidance during the development of the thesis. The final outcome answers the research study develop in Thesis I. *Prerequisite:* MAD 635.

MAD

DEPARTMENT OF MUSIC AND MUSICOLOGY

MUSIC AND MUSICOLOGY - MUSICOLOGY

MUSIC AND MUSICOLOGY - ARABIC MUSICOLOGY

MUSIC AND MUSICOLOGY - MUSIC EDUCATION

MUSIC AND MUSICOLOGY - MUSIMEDIALOGY

MUSIC AND MUSICOLOGY - JAZZ MUSIC

BA DEGREE

MA DEGREE

MUSIC

DEPARTMENT OF MUSIC

Senior Lecturer: Lawoun, Dolcy

THE DEGREE OF BACHELOR OF ARTS IN MUSIC AND MUSICOLOGY - MUSICOLOGY

Mission

The Department of Music and Musicology at NDU aims to prepare students to obtain undergraduate and graduate degrees in Music. It offers a comprehensive quality education that fosters excellence in scholarship and the opportunity to develop competence and expertise in the areas of music, history, theory, analysis, and composition. Students will acquire additional skills such as critical thinking, performance, interpretation, improvisation, and creativity. Its curriculum follows the American model of liberal arts education.

Program Educational Objectives

The objectives of the BA in Music and Musicology program are tailored to the needs of students who wish to have a successful career in the music industry, in particular to:

- Understand the historical musical styles, compositional techniques, and performance practices of various style periods;
- Recognize the scales and modes of the music literature;
- Understand the language of different instruments of the orchestra;
- Implement original musical ideas to imagination; and
- Use new technologies when writing music.

Learning Outcomes

Upon graduation with a BA in Music and Musicology, students will:

- Demonstrate the ability to prepare, compose, and arrange both classical and jazz music;
- Perform a recital by applying specialized skills and techniques of music performance on each student's major instrument or voice;
- Relate music to different sisters disciplines;
- Demonstrate strong skills in improvisation, performance of various styles of jazz, and a basic knowledge of jazz history; and
- Conclude using critical thinking on findings in musicology.

Admission Requirements

Prior to admission, applicants will be subject to a practical evaluation, which covers instrument, voice, and musical background. Students with no piano background will have to take Applied Instrumental and Vocal Piano MUS 211 and MUS 221, as a remedial with the option to add another instrument.

Graduation Requirements

To receive a BA in Music, a student must complete a total of 99 credits with a minimum cumulative GPA of 2.0/4.0 in all Core and Major Courses. Any major course with a grade of less than "C" must be repeated. The 99 credits necessary for graduation are divided as follows:

Degree Requirements (99 credits)

Liberal Arts Core Curriculum (LAC) **30 cr.**

Major Requirements **36 cr.**

Music & Musicology (32 cr.)
(History; Analysis; Theory)
MUS 211, MUS 214, MUS 215, MUS 216, MUS 217, MUS 221, MUS 228, MUS 229, MUS 245, MUS 246, MUS 247, MUS 282.

Performance (Major electives) (4 cr.)
(Vocal, Piano, Guitar, Lute, Percussion)
MUS 331, MUS 341, MUS 441, MUS 451.

Concentration **27 cr.**
(Theory; Ensemble; Composition)
MUS 227, MUS 243, MUS 244, MUS 337, MUS 344, MUS 354, MUS 444, MUS 454, MUS 455.

Free Electives **6 cr.**

Students interested in becoming entrepreneurs and growing their business ideas are advised to take the following course as a free elective:
ENT 302 Entrepreneurship: Launching New Ventures.
Students interested in pursuing an MBA are advised to take two of the following courses as free electives:
MGT 630, MRK 620, PRM 625, PRM 635 or PRM 645.

Note that these courses will be counted towards obtaining the MBA degree.

THE DEGREE OF BACHELOR OF ARTS IN MUSIC AND MUSICOLOGY - MUSIMEDIALOGY*

An avant-garde perspective combining music to all fields of media needed for music. Students will master the art of relaying music information via radio, TV, journalism, and telecommunication systems.

Degree Requirements (99 credits)

Liberal Arts Core Curriculum (LAC) **30 cr.**

Major Requirements **36 cr.**

Music & Musicology (32 cr.)
(History; Analysis; Theory)
MUS 211, MUS 214, MUS 215, MUS 216, MUS 217, MUS 221, MUS 228, MUS 229, MUS 245, MUS 246, MUS 247, MUS 282.

Performance (Major electives) (4 cr.)
(Piano, Guitar, Lute, Percussion)
MUS 331, MUS 341, MUS 441, MUS 451.

Concentration **27 cr.**
(Theory; Ensemble; Composition)
JOU 310, MUM 347, MUM 350, MUM 437, MUM 448, MUM 457, MUM 474, MUM 475, MUM 476.

Free Electives **6 cr.**

Students interested in becoming entrepreneurs and growing their business ideas are advised to take the following course as a free elective:
ENT 302 Entrepreneurship: Launching New Ventures.
Students interested in pursuing an MBA are advised to take two of the following courses as free electives:
MGT 630, MRK 620, PRM 625, PRM 635 or PRM 645.
Note that these courses will be counted towards obtaining the MBA degree.

*Not offered at the present time

THE DEGREE OF BACHELOR OF ARTS IN MUSIC AND MUSICOLOGY - JAZZ MUSIC*

Jazz music was the musical phenomenon that combined American, African, and First Nations music and heritage. Developed in the American Continent, it spread around the world. It became evident that such a rich form of music was able to touch a great number of music lovers and scholars at an international level. It is a musical art with its own language, rhythms, and harmony, excelling in its creative improvisation. Our students will become knowledgeable with the masters of such art including composers, performers, and schools.

Degree Requirements (99 credits)

Liberal Arts Core curriculum (LAC) **30 cr.**

Major Requirements **36 cr.**

Music & Musicology (32 cr.)
(History; Analysis; Theory)
MUS 211, MUS 214, MUS 215, MUS 216, MUS 217, MUS 221, MUS 228, MUS 229, MUS 245, MUS 246, MUS 247, MUS 282.

Performance (Major Electives) (4 cr.)
(Piano, Guitar, Lute, Percussion)
MUS 331, MUS 341, MUS 441, MUS 451.

Concentration **27 cr.**
(Theory; Ensemble; Composition)
MUJ 311, MUJ 322, MUJ 324, MUJ 325, MUJ 342, MUJ 345, MUJ 352, MUS 357, MUJ 411, MUJ 422, MUJ 434, MUJ 435, MUJ 474, MUJ 475, MUJ 485, MUJ 486, MUJ 494, MUJ 495.

Free Electives **6 cr.**

Students interested in becoming entrepreneurs and growing their business ideas are advised to take the following course as a free elective:
ENT 302 Entrepreneurship: Launching New Ventures.
Students interested in pursuing an MBA are advised to take two of the following courses as free electives:
MGT 630, MRK 620, PRM 625, PRM 635 or PRM 645.
Note that these courses will be counted towards obtaining the MBA degree.

*Not offered at the present time

Minor in Jazz (15 credits)*

The selection and preparation of courses for the minor in Jazz Music at the Department of Musicology is based on the observation that the contemporary application of jazz music seems more attractive to the younger generations: the number of students inquiring about jazz music exceeds the number of students inquiring about other minors in music. This minor will educate students about the background theory and the applied instrumentals needed to qualify for job opportunities in entertainment, teaching, festivals, directing, etc.

NDU is the first university in Lebanon to offer this minor and create opportunities for students to enhance their education with added knowledge in the subject and in accordance with the University mission and its commitment to the philosophy and adherence to the standards of the American model of liberal arts education.

The goal is to attract students from other Faculties to learn the jazz music language and appreciate the cultural richness of this field. Theory and application will be combined to provide the knowledge and creativity in becoming aware of this music.

Proposal: The NDU minor in Jazz Music comprises 15 credits. The candidate could be an amateur musician practicing a musical instrument. Occasionally students with a good academic standing of a GPA of 2.0/4 or above may enroll in this minor. They can count only 6 credits that they have taken from the list of the Jazz Music minor requirements while pursuing another major.

The Courses required for a Minor in Jazz*

MUS 211	Applied Music Instrumental or Vocal I	1 cr.
MUS 221	Applied Music Instrumental or vocal II	1 cr.
MUJ 311	Jazz Sight Singing, Ear Training and Rhythmic Analysis I	1 cr.
MUJ 324	History and Analysis of Jazz Music I	2 cr.
MUJ 342	Jazz Theory I	1 cr.
MUJ 474	Jazz Ensemble I	1 cr.
MUJ 485	Jazz Arranging I	2 cr.

Pool 1: Two courses from the following

MUJ 345	Afro-Cuban Music and Percussion	2 cr.
MUJ 352	Jazz Theory II (theory)	2 cr.
MUJ 357	Latin American Music (2.0)	2 cr.
MUJ 486	Jazz Arranging II (practice)	2 cr.

Pool 2: Two courses from the following

MUS 331	Applied Music Instrumental III	1 cr.
MUJ 322	Jazz Sight Singing, Ear Training and R. A. II (practice)	1 cr.
MUJ 475	Jazz Ensemble II (practice)	1 cr.

*Not offered at the present time

Minor in Music and Musicology (15 credits)

The minor in Music offers students a targeted exploration of the cultural and historical contexts of music. The program endeavors to foster a nuanced comprehension of musical traditions and their influence on societies. Through coursework covering the fundamentals of music, encompassing notation, history, theory, analysis, and performance, students acquire critical thinking skills and the capacity to contextualize musical works.

Upon completion of the program, students develop a comprehensive appreciation for music, coupled with a solid foundation that prepares them for diverse career paths. This enables students to meld their passion for music with analytical skills that are applicable across various sectors.

Proposal: The NDU minor in Music and Musicology comprises 15 credits. The candidate could be an amateur musician practicing a musical instrument. Occasionally students with a good academic standing of a GPA of 2.0/4 or above may enroll in this minor. They can count only 6 credits that they have taken from the list of the Jazz Music minor requirements while pursuing another major.

The Courses required for a Minor in Music and Musicology

MUS 210	Music Appreciation	3 cr.
MUS 211	Applied Music Instrumental or Vocal I	1 cr.
MUS 214	Musicology I	3 cr.
MUS 217	Arabic Music Theory: Maqamat and Genres I	3 cr.
MUS 221	Applied Music Instrumental or vocal II	1 cr.
MUS 331	Applied Music Instrumental or Vocal III	1 cr.
MUS 354	Organology of Music	3 cr.

THE DEGREE OF BACHELOR OF ARTS IN MUSIC AND MUSICOLOGY - ARABIC MUSICOLOGY*

بكالوريوس في الموسيقى والعلوم الموسيقية العربية- علوم الموسيقى العربية
(تُعطىٰ في اللغة العربية)

A concentration in the different schools of Arabic Music, from Al-Kindi and Al-Farabi to the modern era. Students will be proficient in at least one oriental instrument.

Degree Requirements (99 credits)

General Education Requirements **30 cr.**

Major Requirements **39 cr.**
MUA 222, MUA 254, MUS 211, MUS 221, MUS 222, MUS 223, MUS 228, MUS 229, MUS 232, MUS 233, MUS 243, MUS 244, MUS 331, MUS 341, MUS 342, MUS 343, MUS 352, MUS 353, MUS 382, MUS 441, MUS 451, MUS 452, MUS 453, MUS 462, MUS 463.

Concentration
24 cr.
MUA 227, MUA 234, MUA 324, MUA 332, MUA 334, MUA 343, MUS 344, MUA 353, MUA 363, MUA 424, MUA 463, MUA 477.

Free Electives **6 cr.**

*Not offered at the present time

THE DEGREE OF BACHELOR OF ARTS IN MUSIC AND MUSICOLOGY - MUSIC EDUCATION*

A concentration in music education provides students with qualifications to serve in educational settings.

Degree Requirements (99 credits)

General Education Requirements **30 cr.**

Major Requirements **39 cr.**
MUA 222, MUS 211, MUS 221, MUS 222, MUS 223, MUS 224, MUS 232, MUS 233, MUS 234, MUS 243, MUS 324, MUS 331, MUS 334, MUS 341, MUS 342, MUS 343, MUS 352, MUS 353, MUS 382, MUS 441, MUS 451, MUS 452, MUS 453, MUS 462, MUS 463.

Concentration **24 cr.**
EDU 313, EDU 355, MUE 335, MUE 446, MUE 476, STA 201, MUE 479, MUE 474.

Free Electives **6 cr.**

*Not offered at the present time

Undergraduate Courses: Musicology

MUS 210 Music Appreciation (3.0); 3 cr. This course is based on a brief survey of music history in various cultures and ages aiming at introducing students to knowing and appreciating the art of music in its different forms and instruments. The course relies heavily on listening to music with visual aids, relaying the sound to the instrument.

MUS 211 Applied Music Instrumental or Vocal I (0.2); 1 cr. This course is an introduction to techniques and gestures such as posture and fingering on the piano or other instruments.

MUS 214 Musicology I (3.0); 3 cr. This course is an introduction to Musicology, Theory, and Sight Singing concerning the findings from the origins to the renaissance. It covers the philosophy, the objectives, the scales, the modes, and the problems of musicology. It describes the disciplines related to this science and explains the sources and the interpretations throughout its development, in addition to the analysis of scores and choir singing. This course consists of lectures, training, and projects.

MUS 215 Musicology II (3.0); 3 cr. This course is a continuation of Musicology I, where an application of the musical language theory, the counterpoint, the tonalities, the harmony, the sight singing, and auxiliary disciplines are performed on baroque, classical, and romantic works. It practices an analysis of scores and choir singing. A research project is submitted. *Prerequisite:* MUS 214.

MUS 216 Musicology III (3.0); 3 cr. This course requires the mastering of the musical elements and languages of the post-Romantic period, the 20th century, and contemporary music. It uses advanced educational material in harmony and sight singing relative to the serial language of music, the tone scale, the polyrhythmic, the polytonality, algorhythmic, multiserial, aleatory, and all composition schools of the 20th and contemporary period with an analysis of scores and choir singing. *Prerequisite*: MUS 215.

MUS 217 Arabic Music theory: Maqamat and genres I (3.0); 3 cr. In preparation of the history course, this course introduces the maqamat and genres frequently used. It also determines the forms of music following the rhythms assigned.

MUS 221 Applied Music Instrumental or vocal II (0.2); 1 cr. This course is about applying the scores on the voice or instrument. It promotes velocity through regular training. Students will learn the scales and arpeggios (piano). *Prerequisite:* MUS 211.

MUS 227 History of Arabic Music: Beginning to Contemporary (3.0); 3 cr. This course focuses on the main theorists and composers of Arabic music. It includes the Cairo Congress of Arabic Music (1932-1934) and contemporary theorists. *Prerequisite:* MUS 217.

MUS 228 History and Analysis of Western Music: Medieval - Baroque - Classical Period (3.0); 3 cr. This course is a survey of composers, pieces, languages, and styles of medieval, baroque, and classical periods. The instructor focuses on explaining the basic concepts of these periods concerning art, philosophy, and music languages. The teaching process emphasizes analyzing scores as played on instruments or recordings. *Prerequisite:* MUS 215.

MUS 229 History and Analysis of Western Music Romantic - Post Romantic - 20th Century and Contemporary Music (3.0); 3 cr. This course is a survey of composers, pieces, languages, and styles of Romantic, post-Romantic, 20th century, and contemporary periods. The instructor focuses on explaining the basic concepts of these periods

concerning art, philosophy, and music languages. The teaching process emphasizes analyzing scores as played on instruments or recordings. *Prerequisites:* MUS 216, MUS 228.

MUS 243 Lebanese and World Music (3.0); 3 cr. This course studies different scales and modes found in popular and world music.

MUS 244 Ethnomusicology (3.0); 3 cr. This course is an introduction to music of different cultures and times.

MUS 245 MUSICAL FORMS I (3.0); 3 cr. This course is about the structures, the genres, the styles, and the forms of music throughout the history from origins to the classical period. *Prerequisite:* MUS 214.

MUS 246 MUSICAL FORMS II (3.0); 3 cr. This course is about the structures, the genres, the styles and the forms of music throughout the history from the Romantic, post-Romantic to modern music, 20th C and contemporary music. *Prerequisites:* MUS 216, MUS 245.

MUM 347 Computer and Music (3.0); 3cr. This course is an introduction to different musical notation and MIDI programs. It is about composing with electronic sonic aspects.

MUS 282 Methodology of Music/ Research (3.0); 3cr. This course teaches the students to identify musical sources, learn the principles of research, and develop research styles, citations, formatting, and textual criticism. It introduces the art of writing theses and scientific works. This course requires a presentation of a research project.

MUS 331 Applied Music Instrumental or Vocal III (0.2); 1 cr. This course is based on private lessons with the instructor on the student's main instrument. *Prerequisite:* MUS 221.

MUS 337 Arabic Music Theory: Maqamat and Genres II (3.0); 3 cr. This course relies on the development of all maqamats and genres. It determines the understanding of new modes, rhythms, and forms. *Prerequisite:* MUS 227.

MUS 341 Applied Music Instrumental or Vocal IV (0.2); 1 cr. This course is based on private lessons with the teacher on the student's major instrument. *Prerequisite:* MUS 331.

MUS 344 Religious Music (Gregorian, Byzantine, and Syriac) (3.0); 3 cr. This course is based on the survey of Gregorian, Byzantine, and Aramaic chants and their modes.

MUS 354 Organology of Music (3.0); 3 cr. This course covers music prototype instrument-manufacturing and evolution through history, particularly strings, winds, ear, and vocal cords.

MUS 441 Applied Music Instrumental or Vocal V (0.2); 1 cr. This course is based on private lessons with the instructor on the student's main instrument. *Prerequisite:* MUS 341.

MUS 444 Philology of Music (3.0); 3 cr. This course covers musical intelligence and the development of musical principles, intervals, and scales. *Prerequisite:* MUS 246.

MUS 451 Applied Music Instrumental or Vocal VI (0.2); 1 cr. This course is based on private lessons with the instructor on the student's main instrument. Knowledge of 50% of the Latin program or its equivalent is needed. *Prerequisite:* MUS 441.

MUS 454 Instrumentation (3.0); 3 cr. This course is based on the study of instrumentation and arranging different music to different ensembles. *Prerequisite:* MUS 216.

MUS 455 Orchestration (3.0); 3 cr. This course covers the art of orchestra composition based on the evolution of instruments and music schools. *Prerequisite:* MUS 454.

Undergraduate Courses: Musimedialogy*

MUM 347 Computer and Music (3.0); 3 cr. This course is an introduction to different musical notations and MIDI programs. It is about composing with electronic sonic aspects.

MUM 350 Audio-Video Music Workshop (3.0); 3 cr. The courses teaches the art of audio-video equipment within the context of musical software for composition such as Nuendo, VSTs, and other listening and working tools. This course adds an extra dimension to this audio-video art, including: serving, composing, and producing an audio work, as well as conceiving and realizing music for video in its broadest sense, from advertising music to pure music composition. Students will be exposed to new tools, ways, and skills of composing during the course.

MUM 437 Music Management (3.0); 3 cr. This course will cover business aspects of the arts, particularly selecting suitable musical acts for performances, providing the venue, selecting the program, promoting the act, selling the tickets, and the various rules and P.R. required for musician relation with consumers, the public, and producers. Music Management studies the procedures and techniques applied to administer and manage areas in the musical industry such as choirs, classes, concerts, production, festivals, musical events, and talent management through the public marketing of the final production.

MUM 447 Survey of Art Schools (1.0); 1 cr. This is a course surveying the art schools and aims to prepare students for musical criticism.

MUM 448 Musical Criticism (3.0); 3 cr. Writing musical critiques, reviews, and previews of musical events will be covered in this course.

MUM 457 Radio and Television Music Casting (3.0); 3 cr. This course is based on performance critiques, reviews, and previews of musical events, live or taped on the radio or television. Students are required to maintain two free hours, one before and the other after the lecturing time of the course.

MUM 474 Music Law (3.0); 3 cr. The course focuses on the national, regional, and international laws protecting the rights of composition, production, distribution, and marketing both locally and internationally. Students will be acquainted with the various international organizations protecting intellectual property such as SACEM, WTO, and others.

MUM 475 Acoustics of Music (3.0); 3 cr. This course covers basic physical principles of waves required to understand the phenomenon of music, the acoustic and electronic musical instruments, and sound effects of rooms/halls. This course is suitable for Music majors and anyone interested in the science behind music.

MUM 476 Basic Conducting (3.0); 3 cr. This course explains the principles of conducting and using the baton. It emphasizes dealing with ensembles and choirs. It defines the meaning of the musical signs and their interpretation. *Prerequisite:* MUS 454.

*Not offered at the present time

Undergraduate Courses: Jazz Music*

MUJ 311 Jazz Sight Singing, Ear Training and Rhythmic Analysis I (1.0); 1 cr. The course deals with the basic sight singing so that students would begin to grasp the specificities of elementary level of jazz melody and rhythm. Practicing by voice and instrument are an integral part of this course.

MUJ 322 Jazz Sight Singing, Ear Training and Rhythmic Analysis II (1.0); 1 cr. The course provides students with an intermediate level of learning the specificities of jazz melody and rhythm based mainly on major and minor. *Prerequisite:* MUJ 311.

MUJ 324 History and Analysis of Jazz Music I, (2.0); 2 cr. The course provides a historical and analytical overview of jazz's roots and development. It focuses on the works of the master jazz composers, from Oliver to Hawkins.

MUJ 325 History and Analysis of Jazz Music II, (2.0); 2 cr. The course provides an advanced analysis of the works and performance of the jazz master composers and performers during the 1930s.

MUJ 342 Jazz Theory I, (1.0); 1 cr. Theory of Jazz Music is divided into two credit courses to be taught in two academic semesters: MUJ 342 and MUJ 352. This course provides, in addition to the classical theory of music, the specific foundations of Jazz Theory and Harmony. MUJ 342 begins with basic Jazz Theory, the Major Scale and the II-V-I Progression, Chord, Major Scale Harmony, Melodic Minor Scale Harmony, Diminished Scale Harmony, Whole Tone Scale Harmony, and practicing Scales and Slash Chords. The course will be taken in conjunction with four other semester courses dealing with Sight Singing and Ear Training.

MUJ 345 Afro-Cuban Music and Percussion (2.0); 2 cr. The course explores the history of various styles of Afro-Cuban Music and Percussion and its dual relation to the jazz language. The percussion instruments are all studied and explored in a group setting. Afro-Cuban religious ceremonial rhythms, in addition to drum set applications, are also covered. The course also focuses in depth upon the analysis and knowledge of the inner workings of clove and basic techniques on the major battery of Afro-Cuban percussions (e.g., congas, bongo, timbales, etc.) in addition to minor battery (e.g., maracas, guiro, shakers, cowbells, etc.).

MUJ 352 Jazz Theory II, (2.0); 2 cr. In continuity with Jazz Theory I, this course includes improvisation from Scales to Music, the Bebop Scales, playing "Outside", Pentatonic Scales, the Blues, rhythm changes, melodic construction, choir voicing, and voice leading. The course aims to expose students to other important and related topics to include basic music analysis, the blues, standard jazz forms, and typical chord substitutions. *Prerequisite:* MUJ 342.

MUJ 357 Latin American Music (2.0); 2 cr. This course will introduce students to the most important artists of Latin American music. The students will learn how to define, describe, and aurally decipher between styles of music from a variety of Latin American countries. The course covers lectures and research projects.

MUJ 411 Jazz Sight Singing, Ear Training and Rhythmic Analysis III (1.0); 1 cr. The course offers the students a higher level of learning the sight singing and ear training of jazz music as applied to accidental and ethnic modalities that jazz has developed. *Prerequisite:* MUJ 322.

MUJ 422 Jazz Sight Singing, Ear Training and Rhythmic Analysis IV (1.0); 1 cr. This is an advanced level course in learning sight singing and ear training of jazz music. It focuses on reaching and analyzing complex melodies and rhythms. *Prerequisite:* MUJ 411.

MUJ 434 History and Analysis of Jazz Music III, (2.0); 2 cr. The course focuses on the development of jazz music during the 1950s-60s with special emphasis on the works of the masters of this period.

MUJ 435 History and Analysis of Jazz Music IV, (2.0); 2 cr. Students will be exposed to the evolution of the jazz language, styles, and forms as presently performed.

MUJ 474 Jazz Ensemble I (1.0); 1 cr. The course offers the students the opportunity to prepare him/herself, accompanied by the instructor, to master and qualify as a competent member of the jazz ensemble. The course encompasses the elementary forms of the big band.

MUJ 475 Jazz Ensemble II (1.0); 1 cr. This course is an advanced level of jazz ensemble. The main objective centers upon giving the student the necessary experience from playing in a band and spending longer time into applying the practical side of learning. It develops sight reading skills and creativity in the student so that he or she might be able to perform arrangements and compositions as well as play in bands. (Students who register for this course should understand that each teaching hour tends to last two to three hours in practice.

MUJ 485 Jazz Arranging I (2.0); 2 cr. The course provides the student with the basic techniques and methods to arrange existing jazz melodies for small groups.

MUJ 486 Jazz Arranging II (2.0); 2 cr. In this advanced course, the student will master the techniques regarding voicing, instrument sonorities, capabilities, and other extended forms. It focuses on large groups. *Prerequisite:* MUJ 485.

MUJ 494 Advanced Re-harmonization I (1.0); 1 cr. This course provides the students with an overview of the variety of techniques for re-harmonization. *Prerequisites:* Theory of Music II or equivalent.

MUJ 495 Advanced Re-harmonization II (1.0); 1 cr. The course will focus in-depth on materials stressing the pedal point and the creation of chromatic voicing to enable students to develop a personalized relationship with the harmony. *Prerequisite:* MUJ 494.

*Not offered at the present time

Undergraduate Courses: Arabic Music*

MUA 218 Arabic Prosody (2.0); 2 cr. (علم العَروض) لأوزان الشعريّة العربيّة وإيقاعاتها، موسيقى الشعر.

MUA 222 Arabic Music Theory I (3.0); 3 cr. (Theory, Maqamat, rhythms and forms).

MUA 227 Arabic Music Theory II (3.0); 3 cr. تحاليل معمّقة للنظريات الموسيقيّة العربيّة: (نظريّات الموسيقة العربيّة، المقامات المركّبة والإيقاعات المركّبة). *Prerequisite:* MUA 222.

MUA 228 History and Analysis of Western Music A (3.0); 3 cr. The course is a condensation of two courses MUS 224 and MUS 234.

MUA 229 History and Analysis of Western Music B (3.0); 3 cr. The course is a consensation of two courses MUS 324 and MUS 334.

MUA 234 History and Analysis of Arabic Music II (2.0); 2 cr. Al-Kindy - Andalusian music

MUA 254 History of Arabic music I. (3.0); 3 cr. A general survey of the history of of Arabic music from the beginning to the contemporary era.

MUA 318 Qoran Chanting (2.0); 2 cr. (الانشاد القرآني).

MUA 324 History and Analysis of Arabic Music III (3.0); 3cr. Al-Farabi.

MUA 332 Arabic Music Theory III (2.0); 2 cr. تحاليل مؤلّفات عربية كلاسيكيّة واستخراج النظريّات الموسيقيّة العربيّة: المقامات المركّبة والإيقاعات المركّبة منها.

MUA 334 History and Analysis of Arabic Music IV (2.0); 2 cr. Ibn Sina, Al-Ikhawan Al-Safa, Ibn Rushd.

MUA 343 Oriental Sight Singing 1 (1.0); 1 cr. صولفيج شرقي ١

MUA 353 Oriental Sight Singing 2 (1.0); 1 cr. صولفيج شرقي ٢
Prerequisite: MUA 343.

MUA 363 Oriental Sight Singing & Ear Training 3 (1.0); 1 cr. صولفيج شرقي ٣
Prerequisite: MUA 353.

MUA 374 Arabic Instrumental Ensemble (2.0); 2 cr. This course offers the student the possibility to apply within an ensemble the Arabic Music Instrument he plays or the Arabic Chanting he studied, not withstanding that the difference between playing instrument and singing alone would not provide the student the same knowledge and experience compared to the same application in a group.

MUA 424 History and Analysis of Arabic Music V (2.0); 2cr. Cairo Congress of Arabic Music 1932-1934 Michael Moushaqa and contemporary theorists.

MUA 444 History and Analysis of Arabic Music VI (3.0); 3 cr. Arab Renaissance-Modern Arabic Music.

MUA 463 Oriental Sight Singing & Ear Training 4 (1.0); 1 cr. صولفيج شرقي ٤
Prerequisite: MUA 363.

MUA 477 Andalousian Music (3.0); 3 cr. الوزن الشعري للموشّحات الأندلسيّة والموسيقى الناتجة عنه في الحقبة الأندلسيّة؛ ومميّزات هذه الموسيقى من حيث النغم والشكل والإيقاع وانتقالها من الأندلس إلى المغرب العربيّ ثمّ إلى حلب ومصر...

*Not offered at the present time

Undergraduate Courses: Music Education*

MUE 335 Music Education (3.0); 3 cr. A survey of the various musical education methods, such as the Orff, Dalcroze, Kodaly, Suzuki, and other methods.

MUE 446 Teaching Music at the Elementary Level (3.0); 3 cr. Writing lesson plans appropriate to the elementary level and applying them. Learning teaching methods suitable for the age group (6-11).

MUE 474 Child Theater Music (3.0); 3 cr. This course is divided into two parts: one theoretical and the other practical. This course requires music majoring students to study and apply the learned material to create and develop theatrical events for children in neighbouring schools.

MUE 476 Teaching Music at Secondary Level (3.0); 3 cr. Writing lesson plans appropriate to the secondary level and applying them. Learning teaching methods suitable for the age group (12-17).

MUE 479 Lebanese Folk Educational Music (3.0); 3 cr. This course centers upon a variety of music folk education covering a wide span beginning with the childhood to adulthood. Special emphasis will be on exploring the local folk musical trends and traditions which would drive the educator to focus on local modalities: rhythms and forms.

*Not offered at the present time

THE DEGREE OF MASTER OF ARTS IN MUSIC*

Graduate study in Musicology covers approaches such as historical and ethnomusicological investigation as well as hermeneutics, semiotics, and criticism. Students are expected to become familiar with a wide range of areas, namely methods, philosophies, and techniques of historical research methods for analysis of music and ethnomusicological research.

Students enrolled in the program are expected to familiarize themselves with the current state of musicological research and thinking through independent study as well as in consultation with faculty members. Students are also expected to take an active part in the working musicological community at large, through participation in regional, national, and international meetings and concomitant informal contacts with students and faculty at other institutions.

The program aims to:

- Develop and sharpen the skills each student needs to realize his or her future specialization intentions;
- Expand each student's conception of what is possible in construing music performance or research through speculation and experimentation; and
- Develop a larger and sharper sense of the context in which students work, and on which it depends by continued study and research.

Admission Requirements

Applicants will normally hold a BA in Music or an equivalent qualification. They need to submit an extended piece of writing on a musical subject to provide evidence of writing skills and intellectual ability appropriate for musicological study at the master's level. An English test is required except for students majoring in Arabic music. Selection is based on information submitted by the applicant, and by interview when necessary.

Transfer

Although transfer is not generalized, some credits from major universities can be transferable upon admission by the Committee. A transferred course must be passed at the grade of 80, according to the *University Grading and Bylaws.*
In addition, applicants for the graduate program may be granted a maximum of 9 transfer credits of graduate studies taken at another accredited institution of higher education provided that the transfer course(s) correspond to the NDU course requirements.

Graduation Requirements

To receive the degree of Master of Arts in Music, a student must complete a total of 36 credits. The minimum passing grade of a graduate course is C. Students in graduate studies are required to maintain a cumulative GPA of at least 3.0/04 in all courses taken for graduate programs with no more than 2 Cs per program.

Structure and Time-table

The program is delivered over four semesters. All students, whether full- or part-time, initially complete the program requirements, and then attend the research method course. Classes are normally timetabled in the afternoons.

*Not offered at the present time

The program moves from general methodological concerns towards greater specializations:

- Research methodology;
- Academic study. All students are required to take courses in Musical Thought, Languages, and Aesthetics; and
- Dissertation. Here students embark on a program of independent study, supervised by a dissertation advisor.

Degree Requirements (36 Credits)

Major Courses **36 cr.**

MUS 615, MUS 616, MUS 617, MUS 625, MUS 626, MUS 627, MUS 636, MUS 637, MUS 638, MUS 639, MUS 699.

Graduate Courses: Music*

MUS 615 Methodology of Research (3.0); 3 cr. Students learn the art of writing the MA thesis. In this course, students will use a variety of methods, skills, and sources, including, but not limited to, qualitative and quantities information, i.e. documentation techniques. Students will need to focus on the application side of methodological techniques and international theory displaying the ability to analyze, discover, evaluate, and use actual archives, musicological tools and technology, and other source or reference material.

MUS 616 Seminar in Musicology I (3.0); 3 cr. Original work in areas of current musicological significance will be presented to and reviewed by the seminar as the occasion arises. Emphasis is given to student projects, but work in progress by any member of the seminar may be discussed or a topic of particular controversy examined.

MUS 617 Seminar in Musicology II (3.0); 3 cr. A student may choose a free subject related to his or her one musical interest that he or she may specialize in for his or her Ph.D.

MUS 625 Seminar in Ethnomusicology I (3.0); 3 cr. Research Methods in Ethnomusicology will be covered such as Musical Ethnography, an introduction to the theories and methods of ethnomusicological fieldwork, changing conceptions of the research site, ethical concerns, interview techniques, the ethnography of musical performance, and data analysis and interpretation. Individual research project is required.

MUS 626 Seminar in Ethnomusicology II (3.0); 3 cr. This course covers ethnomusicology including theory and structure of oriental or occidental Classical Music. Students analyze rhythmic and melodic structures of musical genres and forms, examine relative explanatory tools, and assess alternate theories of music material.

MUS 627 Art Criticism (3.0); 3 cr. This course studies the methods used by various schools of art criticism throughout history with special emphasis on helping students see how technology and the diversity of languages in modernity have influenced contemporary methods of art criticism.

MUS 636 Aesthetic Philosophy (3.0); 3 cr. This course investigates the fundamental nature or soul of art and aesthetic experience. Students explore and scrutinize the artistic theories and aesthetic principles that are presupposed in both Western and Eastern art. This course provides students with both a personal appreciation of aesthetics, as well as a basic ability to apply this appreciation to art criticism.

MUS 637 Modern Music: 1900 - 1960 (3.0); 3 cr. This course is based on a survey of major works from occidental music, spanning the first six decades of the 20th century and is divided into three periods: 1900 to World War I, WWI to WWII, and 1945 to the early 1960s. The following composers receive the greatest attention: Schoenberg, Berg, Webern, Ravel, Stravinsky, Prokofiev, Shostakovich, Ives, Britten, Messiaen, Stockhausen, and Carter. By studying the great masters of modern music, the student would learn how to discern their creations in order to produce and apply his or her own particular musical language using new elements of his or her own cultural content.

MUS 638 Serial Music (3.0); 3 cr. This course is a critical examination primarily of twelve-tone serialism. Particular emphasis is given to the relations embodied in the twelve-tone set and its transformations, associated invariants, combinatorial, derivation, and aggregate structure, with reference to representative compositional realizations. The dimensions and the levels of structure that do not necessarily manifest set relations are also examined.

*Not offered at the present time

MUS 639 The Music Industry (3.0); 3 cr. The course will assist the student to invent and invest in music. It prepares the student for a more fruitful interaction with the present techniques and music technology by managing the world of sound from the microphone to the commercial music items.

MUS 699 Thesis (6.0); 6 cr. This course mainly includes the development of a dissertation of around 15,000 words on an agreed-upon subject.

FACULTY OF BUSINESS ADMINISTRATION & ECONOMICS

FBAE

FACULTY DIRECTORY

www.aacsb.edu/about.

FACULTY DIRECTORY

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Academic Advisors

Graduate Advisors

MS in Financial Risk Management
Hamadi, Hassan, Ph.D.

MBA (General) and (Emphasis in Project Management)
Harb, Atef, Ph.D.

MS in Business Strategy
Harb, Atef, Ph.D.

Student Advisors of the Department of Economics

Economics
Badr, Georges, Doctorate

Student Advisors of the Department of Accounting and Finance

Accounting
Khalil, Sandra, D.B.A.

Banking and Finance
Skaf, Yahya, Ph.D.; Saad, Ghadi, Ph.D.; Badr, Georges, Ph.D.

Financial Engineering
Hamadi, Hassan, Ph.D.; Rizk, Ribal, Doctorate; Matta, Joelle, Doctorate; Al Khoury, Vanessa, Doctorate

Student Advisors of the Department of Management and Marketing

Business Management
El Zein, Ahmad, D.B.A.; Hilal, Nisreen, D.B.A.

International Business Management
Eid, Marguerite, Ph.D.; Jibai, Bilal, Ph.D.

Marketing
Azouri, Marwan, Ph.D.; Sleilati, Esther, D.B.A.

Human Resource Management
Harb, Yara, Ph.D.

Distribution and Logistics Management
Trad, Mony, Ph.D.

Entrepreneurship
Harb, Yara, Ph.D.

Student Advisors of the Department of Hospitality and Tourism Management

Hospitality Management
Zgheib, Youssef, Ph.D.

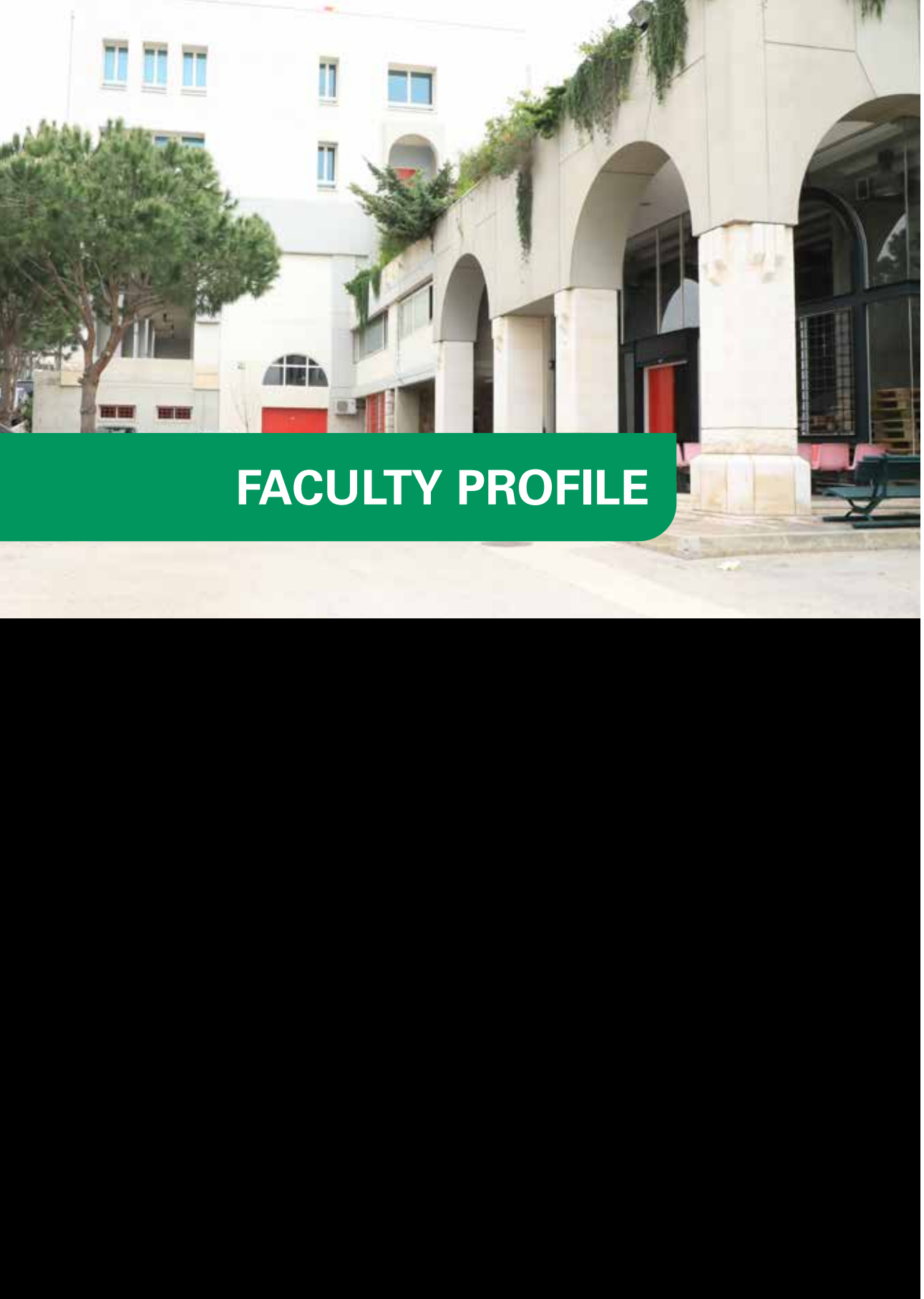
Food and Beverage Management
Sakr, Omar, MSc.

Events Management
Beyrouthy, Ghassan, MBA

Coordinators of Regional Campuses

North Lebanon Campus
Haddad, Dorine, Ph.D.

Shouf Campus
Kassamany, Talie, Ph.D.



FACULTY PROFILE

FACULTY PROFILE

The Faculty of Business Administration and Economics (FBAE) is accredited by the Association to Advance Collegiate Schools of Business (AACSB), serving as a testament to the FBAE's commitment to excellence in business education. This accreditation places the FBAE among the top 5% of business schools worldwide that hold AACSB accreditation. The rigorous AACSB accreditation entails meeting stringent criteria related to faculty qualifications, curriculum design, student learning outcomes, and engagement with the business community. This ensures that the FBAE is strongly equipped to prepare students to excel in the dynamic and globally competitive business environment.

Presently, the FBAE welcomes over 1,200 students across its three University campuses: Zouk Mosbeh, Barsa (North Lebanon Campus, NLC), and Deir el-Kamar (Shouf Campus, SC). The FBAE offers a comprehensive range of programs, including the Bachelor of Business Administration (BBA) with nine distinct concentrations, Bachelor of Science (BS) in Economics, Bachelor of Hotel and Tourism Management (BHTM) with three concentrations, Master of Business Administration (MBA), Master of Science (MS) in Business Strategy, and MS in Financial Risk Management. The FBAE encompasses four departments: the Department of Accounting and Finance, Department of Economics, Department of Management and Marketing, and Department of Hospitality and Tourism Management.

Driven by the rising demand for the FBAE programs, the Faculty has experienced remarkable growth, establishing itself as one of the fastest-growing Faculties at NDU. Mindful of the professional responsibilities and civic duties arising from its success, the FBAE is continuously renewing and transforming itself, ensuring that its offerings remain at the forefront of business education.

MISSION, VISION, AND VALUES

Mission

The FBAE is dedicated to cultivating in its students the essential skills, knowledge, and moral values to be ethical citizens and socially responsible professionals, driving positive impact in their organizations and communities, with a special commitment to addressing poverty. We strive to offer our student body a timely and practical education in business and economics, relevant and responsive to market needs.

Vision

To be identified as a premier business school, with top rankings in all key disciplines of business and economics, offering knowledge and value-based, life-transforming experiences directly relevant to the local and regional market place.

Values

While open to all aspiring learners, the FBAE at NDU cherishes Christian and human principles applied in a free, competitive, and socially responsible manner. Its values are inspired by that of the University, which couples a love of scientific inquiry with a vision of ethical and social responsibility. As such, the Faculty engages its members and learners alike in activities relevant to the local community and society. These core values are:

- Professionalism and integrity;
- Freedom and accountability;

- Intellectual curiosity and initiative;
- Respect for diversity;
- Innovation and adaptation; and
- Ethical and responsible behavior.

POLICIES AND PROCEDURES

Admission Requirements:

In addition to the University admission requirements, prospective candidates must complete any remedial course(s) during the first year of enrollment.

LIBERAL ARTS CURRICULUM

The LAC are distributed as follows:

Category I. English and Arabic Communication		**9 cr.**
A. English Communication		6 cr.
ENL 213	Sophomore Rhetoric	3 cr.
And		
ENL 223	Communication Arts	3 cr.
Or		
ENL 230	English in the Workplace	3 cr.
Or		
ENL 231	Work Ready Now	3 cr.
B. Arabic Communication (one course from the following pool)		3 cr.
ARB 211	Appreciation of Arabic Literature	3 cr.
ARB 212	Advanced Arabic Grammar	3 cr.
ARB 224	Arabic Literature and Human Thought	3 cr.
ARB 231	Technical Arabic	3 cr.
ARB 306	The Modern Arabic Novel and Short Story	3 cr.
ARB 310	Arabic Theater	3 cr.
Category II. Religion		**3 cr.**
REG 212	Religion and Social Issues	3 cr.
REG 213	Catholicism	3 cr.
REG 215	World Religions	3 cr.
REG 313	The Maronites: Faith and Cultural Heritage	3 cr.
REG 314	Marriage and Family in the Catholic Church	3 cr.
Category III. Ethics (Faculty-Dependent)		**3 cr.**
MGT 301	Ethics and Responsible Business*	3 cr.
Category IV. Citizenship		**3 cr.**
ENS 202	The Environment and Sustainable Development	3 cr.
FQM 200	Food Security and Sustainability	3 cr.
POS 201	Introduction to Political Science	3 cr.
POS 209	Citizenship	3 cr.
POS 210	Government and Politics of Lebanon	3 cr.
POS 240	Law and Society	3 cr.
POS 319	Democracy and Human Rights	3 cr.

*Compulsory for all undergraduate students enrolled in the FBAE.

Category V. Cultural Studies and Social Science			**3 cr.**
A. Cultural Studies			3 cr.
ARP	215	Cultural Themes in Lebanese Architecture	3 cr.
AVF	315	World Cinema Survey	3 cr.
COA	350	Current Issues	3 cr.
FAP	215	Art and Culture	3 cr.
HIT	211	History of Lebanon and the Middle East	3 cr.
HTM	201	Fundamentals of Hospitality and Cultural Tourism**	3 cr.
HTM	326	Lebanon's Cultural, Heritage and Nature Tourism**	3 cr.
LIR	214	Introduction to Literary Genres	3 cr.
LIR	217	American Literature to the End of the 19th Century	3 cr.
LIR	305	Novel to the End of the 19th Century	3 cr.
ROC	301	Romance Cultures	3 cr.
MUS	210	Music Appreciation	3 cr.
NTR	215	Foods and Nutrition of World Cultures	3 cr.
PHL	211	Logic and the Scientific Method	3 cr.
PHL	232	Ancient World Philosophy	3 cr.
PHL	333	Medieval World Philosophy	3 cr.
PHL	334	Modern and Contemporary World Philosophy	3 cr.
POS	225	Politics of Catholic Social Theory	3 cr.
Category VI. Applied and Life Sciences			**6 cr.**
A. Applied Science			3 cr.
CSC	201	Introduction to Computers	3 cr.
CSC	202	Computers for Visual Arts	3 cr.
CSC	207	Navigating the Age of Artificial Intelligence	3 cr.
ENG	250	Robotics and Society	3 cr.
GIS	211	Principles of Geographical Information Sciences	3 cr.
MAT	203	Everyday Math	3 cr.
MIS	201	Management Information Systems	3 cr.
B. Life and Natural Sciences			3 cr.
AST	201	Discovering Astronomy	3 cr.
BIO	201	Your Body in Action	3 cr.
CHM	201	Chemistry in Everyday Life	3 cr.
ENS	201	Introduction to Environmental Science	3 cr.
HEA	201	Health Awareness	3 cr.
HEA	204	Contemporary Health Issues	3 cr.
NTR	201	Basic Human Nutrition	3 cr.
ENS	203	Biodiversity	3 cr.

**Excluded from the DHTM LAC courses

I- BACHELOR OF BUSINESS ADMINISTRATION (BBA)

Required Common Core courses

All candidates for the BBA degree, irrespective of their area of concentration, must complete the following required common courses. These courses are designed to provide business students with basic management skills (quantitative, behavioral, and technical), which every manager should possess, in order to meet the demanding requirements of modern business organizations and to be able to face new challenges. The courses are:

ACO	201	Principles of Accounting I
ACO	311	Managerial Accounting
MGT	201	Fundamentals of Management
MGT	311	Business Law
MGT	317	Organizational Behavior
MGT	433	Business Policy and Strategic Management
BAF	311	Principles of Financial Management I
ECN	211	Principles of Microeconomics
ECN	212	Principles or Macroeconomics
MAT	204	Math for Business and Economics I
MRK	201	Fundamentals of Marketing
STA	220	Applied Statistics

Major Requirements

Candidates should complete certain concentration courses specified by their respective departments. Together with the common required courses, these courses provide some depth in one particular area of business. For the courses required for each concentration, see the relevant degree requirements.

Internship Program

Internships provide business majors with the opportunity to apply the theories and concepts learned in the classroom. They offer valuable hands-on experience and serve as a catalyst for future employment. Internships are directly relevant to the students' majors and involve working on a specific project. Upon completion, students earn 1 credit for their internship. To receive this credit, interns are expected to work a minimum of 120 to 150 hours (depending on their concentration). It is essential for interns to maintain a record of the hours worked, which should be signed by their direct supervisor. Additionally, interns are required to provide periodic reports throughout the duration of the internship and, at its conclusion, submit a comprehensive report detailing their experience. This report should be assessed and approved by the authorized supervisor. While internships can be undertaken during various periods, it is preferable for students to pursue internships during the summer months.

Additional details are available with the internship advisors.

DEPARTMENT OF ACCOUNTING AND FINANCE

Professors: Hamadi, Hassan; Naimy, Viviane.

Associate Professors: Kassamany, Talie; Khalil, Sandra.

Assistant Professors: El Khoury, Vanessa; Ghadi, Saad; Kordab, Mirna; Matta, Joelle; Skaf, Yahya.

General Description

In alignment with the University mission, the Department of Accounting and Finance (DAF) is committed to offering high-quality BBA with concentrations in Accounting, Banking and Finance, and Financial Engineering. These concentrations provide students with sound theoretical education coupled with a solid professional and technical background. The DAF programs are designed to help students progress in their chosen career by developing the knowledge, skills, and competencies sought by employers. The breadth of subjects within these concentrations enables students to explore a range of business disciplines, including management, marketing, accounting, finance, strategy, and communications. Alongside the structure of the program, a professional team of instructors, comprising practitioners and researchers, is dedicated to helping students achieve their study and career goals.

Mission

Consistent with the Faculty mission, the Bachelor degree of Business Administration in all of its related tracks adopts an interdisciplinary perspective to prepare students for real-world challenges at the national and international levels. Through dynamic and continuous improvement of curricula, the program aims to prepare students for different career opportunities and further academic studies and professional certifications. Moreover, our graduates will be endowed with high ethical standards to act in a socially responsible manner.

Program Learning Outcomes and Goals

LG 1. Business Knowledge: Our graduates will have comprehensive discipline knowledge in business.

Objective 1.1 Students should be able to demonstrate the understanding of core business knowledge in accounting, economics, finance, management and marketing.

LG 2. Critical Thinking: Our graduates will be critical thinkers.

Objective 2.1 Students should be able to critically analyze information to solve business problems using appropriate quantitative and qualitative techniques.

LG 3. Communication: Our graduates will be effective communicators.

Objective 3.1 Students should be able to prepare clear and concise written reports using the appropriate style and structure.

Objective 3.2 Students should be able to deliver effective oral presentations that are well-focused and rigorous.

LG 4. Ethical and social responsibility: Our graduates will have a sound recognition of the ethical and social impacts of business practice.

Objective 4.1 Students should be able to identify ethical issues in business practice.

Objective 4.2 Students should be able to assess social implications in various business situations.

LG 5. Teamwork: Our graduates will be good team participants.

Objective 5.1 Students should be able to collaboratively and positively participate in teams.

Graduation Requirements

The total number of credits required for graduation for a BBA with concentrations in Banking and Finance and in Accounting is 92 credits and 99 credits for a BBA in Financial Engineering. An overall GPA of at least 2.0/4.0, and a minimum GPA of 2.3/4.0 in both the Common Core and Major Requirement courses are required. Students are advised to plan their courses in advance for the entire program.

Admissions Requirements

Applicants must pass the Lebanese Baccalaureate Part II (any strand) or its equivalent as identified by the Lebanese Ministry of Education and Higher Education (MEHE).
An applicant is accepted if he or she fulfills all the University admission requirements.
In addition, there are three states of selection to the BBA: acceptance, conditional acceptance, and rejection. Students may be assigned MAT 105 as a remedial course in light of their composite scores.

THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION - ACCOUNTING

The BBA in Accounting (BBA-ACO) aims at educating students on the broad concepts and principles governing accounting, taxation, and auditing. The program is designed to provide students with both theoretical and practical accounting knowledge as well as strong analytical skills to prepare them for undertaking different positions in the dynamic world of accounting. The BBA-ACO is an ACCA* accredited program.

Degree Requirements (92 credits)

The course requirements in the BBA in Accounting involve a total of 92 credits distributed in the following pools:

Liberal Arts Curriculum **27 cr.**

Required Common Courses **37 cr.**
ACO 201, ACO 311, MGT 201, MGT 311, MGT 317, MGT 433, BAF 311, ECN 211, ECN 212, MAT 204, MRK 201, STA 220.

Major Requirements **28 cr.**
ACO 202, ACO 313, ACO 323, ACO 411, ACO 413, ACO 414, ACO 421, ACO 461, ACO 481, BAF 312, ECN 333.

*ACCA stands for the Association of Charted Certified Accountants.

Minor in Accounting (15 credits)

A minor in Accounting aims to educate students in the broad concepts and principles governing accounting. It is designed to provide students with both theoretical and practical general knowledge of accounting.

Students who graduate with a minor in Accounting will be able to:

- Demonstrate a basic comprehension of Accounting principles, concepts and technical skills;
- Show ability to analyze, compare, and evaluate information to provide adequate accounting solutions; and
- Use computers and accounting software for generating and analyzing financial information.

Students are required to follow the below table:

Course #	Description	Credits	Prerequisite
ACO 201	Principles of Accounting I	3	___
ACO 202	Principles of Accounting II	3	ACO 201
ACO 461	Accounting Software Platforms	0	ACO 323
	CHOOSE THREE OF THE FOLLOWING		
ACO 311	Managerial Accounting	3	ACO 201
ACO 313	Intermediate Accounting	3	ACO 202
ACO 323	Accounting Information Systems	3	ACO 202
ACO 411	Taxation	3	Senior Standing
ACO 413	Auditing I	3	ACO 202
ACO 414	Auditing II	3	ACO 413
ACO 421	Advanced Accounting	3	Senior Standing
Total		**15 cr.**	

Undergraduate Courses: Accounting

ACO 201 Principles of Accounting I (3.0); 3 cr. This course is an introduction to the basic concepts and standards underlying financial accounting systems. It emphasizes the construction and interpretation of the basic financial accounting statements, the income statement, statement of cash flows, and balance sheets, with a focus on the current assets section of the balance sheet: cash, receivables, and inventories. The course also covers revenue and expense recognition issues, equity financing, and generally accepted
accounting principles that affect the format and presentation of financial statements.

ACO 202 Principles of Accounting II (3.0); 3 cr. This course is the second in a sequential series of financial accounting courses. It covers plant assets, liabilities and equity, especially long-term debt, dividends and shares repurchases. Related topics covered include computation of basic earnings per share, disclosure issues, and basic financial statement construction and analysis of cash flows. Moreover, it introduces the students to the basic partnership accounting procedures. *Prerequisite:* ACO 201.

ACO 311 Managerial Accounting (3.0); 3 cr. Managerial accounting is a company's internal language, and is used for decision-making, production management, product design and pricing, and motivating and evaluating employees' performance. Thus, this course covers the use, interpretation, and analysis of management accounting information for management decision-making, planning, and control of operations.
Planning is covered by topics including activity-based costing, budgeting, flexible budgeting, cost-volume-profit analysis, cost estimating, and the costs of outsourcing. Control is covered by topics including standard costing, variance analysis, and performance evaluation. Emphasis is placed on cost terminology, cost behavior, cost systems, and the limitations concerning the use of average costs. *Prerequisite:* ACO 201.

ACO 313 Intermediate Accounting I (3.0); 3 cr. This course provides students with an in-depth understanding of the traditional financial accounting topics, as well as introducing them to recent developments in financial reporting and measurement practices as promulgated by the leading professional accounting organizations and applied by practitioners in public accounting and industry. Topics covered include the theory of accounting and financial reporting, its conceptual framework, major financial statements form and content, financial disclosures, revenue and expense recognition, and accounting changes and errors. *Prerequisite:* ACO 202.

ACO 323 Accounting Information Systems (3.0); 3 cr. This course is designed to present an understanding of accounting information systems and their role in the accounting environment. Particular attention is paid to transaction cycles and internal control structures. Topics to be covered include the software development life cycle, contemporary technology and applications, control concepts and procedures, and auditing of information systems. This course also introduces students to the basic concepts of systems for collecting and processing data necessary in planning, decision-making, and the control of business organizations. Students will also have hands-on practice using accounting software.
This course addresses how computerized accounting information systems capture, process, and communicate accounting data. It also introduces students to the technology, procedures, and processes that are necessary to conduct internal and external control, with an emphasis on the internal controls. *Prerequisite:* ACO 202.

ACO 411 Taxation (3.0); 3 cr. The objective of this course is to provide students with a comprehensive understanding of how taxes function around the world and specifically in Lebanon. They learn how to prepare tax forms and determine what is taxable and what deductions are available. Topics include

overview on taxation, chart of accounts, closing procedures, multi-currency transactions, social security, income taxes, and employment taxes. *Prerequisite:* Senior Standing.

ACO 413 Auditing I (3.0); 3 cr. In today's accounting climate it is important to understand the auditing process including the theory, philosophy, and practice of auditing and the ethical implications of auditing decisions. This course develops an understanding and appreciation of the philosophy of the auditing process and provides students with the skills necessary for effective decisions regarding auditing, financial reporting, and ethical issues that face organizations. The course covers the standards, concepts, and principles related to auditing theory and practice. The concepts of risk and control, and evidence and documentation are considered. It concentrates on the auditing cycle from inception (acceptance of a client) till audit reporting completion. *Prerequisite:* ACO 202.

ACO 414 Auditing II (3.0); 3 cr. This course is the continuation of Auditing I. It provides a thorough understanding of the detailed audit procedure, audit planning, audit completion, and post audit. The course covers cash changes (cash flow), inventory, accounts receivable, accounts payable, fixed assets, auditing revenue cycle, other services, and reports and assurance services. The course uses case studies to further build students' knowledge concerning the audit profession. *Prerequisite:* ACO 413.

ACO 421 Advanced Accounting (3.0); 3 cr. This course presents an in-depth analysis of advanced accounting topics. The student is introduced to the consolidation of financial statements, translation of foreign currencies, the reporting requirements of business segments, international standards, and partnerships. The course is designed to provide an understanding of the technical requirements as well as developing an appreciation for working with accounting statements. *Prerequisite:* Senior Standing.

ACO 461 Accounting Software Platforms (0.1); 0 cr. It is an in-house internship/training program designed to assist students in their transition into the workforce by giving participants a practical hands-on experience. It familiarizes and broadens students' knowledge and understanding of the "Systems and Procedures" used in accounting firms. Students will become adept at using industry-standard software. *Prerequisite:* ACO 323.

ACO 481 Accounting Internship (1.0); 1 cr. This course provides students with an opportunity to balance their classroom experience with work experience. Thus, it provides students with practical application of theories presented at the University and a chance to participate in on-the-job training and experience. *Prerequisite:* Senior Standing.

BANKING AND FINANCE

THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION - BANKING AND FINANCE

The BBA in Banking and Finance (BBA-BAF) aims to provide students with excellent knowledge of the principles of financial management that mainly involves corporate finance, investment, bank management, and asset pricing. The development of the students' theoretical, analytical, and technical skills constitutes the core objective of this program specially designed to combine these skills with real financial applications. The BBA-BAF is an ACCA* accredited program.

Degree Requirements (92 credits)

The course requirements in the BBA in Banking and Finance involve a total of 92 credits distributed on the following pools:

Liberal Arts Curriculum **27 cr.**

Required Common Core Courses **37 cr.**
ACO 201, ACO 311, MGT 201, MGT 311, MGT 317, MGT 433, BAF 311**, ECN 211, ECN 212, MAT 204, MRK 201, STA 220.

Major Requirements (MR) **28 cr.**
ACO 202, BAF 312, BAF 315, BAF 321, BAF 352, BAF 353, BAF 433, BAF 450, BAF 461, BAF 481, ECN 333.

* ACCA stands for the Association of Charted Certified Accountants.
** The passing grade for this course is "C"

Minor in Finance (15 credits)

Finance is the study and practice of decision-making to acquire and manage real and financial assets for the purpose of creating and maintaining economic value. A minor in Finance will provide students with a broad understanding of the principles and practices needed to make financial decisions in corporations, and in commercial and investment banking.

Students who graduate with a minor in Finance will be able to:

- Evaluate the performance of an organization;
- Perform investment analysis, asset allocation, and portfolio management;
- Price derivative instruments and apply hedge strategies; and
- Understand the asset/liability management within banks.

Students are required to follow the below table:

Course #	Description	Credits	Prerequisite
BAF 311	Principles of Financial Management I	3	ACO 201 & STA 220 or ACO 201 & STA 210 or ACO 201 & MAT 325 or ACO 201 & MAT 326
BAF 312	Principles of Financial Management II	3	BAF 311
	CHOOSE THREE OF THE FOLLOWING		
BAF 315	Financial Institutions & Markets	3	BAF 311
BAF 321	Fundamentals of Investments	3	BAF 311
BAF 352	Commercial Bank Management I	3	BAF 312
BAF 353	Commercial Bank Management II	3	BAF 352
BAF 421	Quantitative Asset Management	3	BAF 321
BAF 433	International Business Finance	3	BAF 311 & ECN 212
BAF 450	Derivatives	3	BAF 321
FEN 452	Financial Modeling	3	BAF 321
FEN 455	Advanced Derivatives	3	BAF 450
Total		**15 cr.**	

Undergraduate Courses: Banking and Finance

BAF 311 Principles of Financial Management I (3.0); 3 cr. The purpose of this course is to introduce the concepts of planning, controlling, and monitoring financial resources in order to achieve and optimize the organizational objectives. Topics covered include calculation of cash flows, financial statement analysis, time value of money, stock and bond valuation, capital budgeting techniques, risk-return trade-off, and the security market line. For Financial Engineering and Banking and Finance students, the passing grade is "C". *Prerequisites:* ACO 201 and STA 220 or ACO 201 & STA 210 or ACO 201 and MAT 325 or ACO 201 & MAT 326.

BAF 312 Principles of Financial Management II (3.0); 3 cr. This course is the continuation of BAF 311. Topics covered include capital budgeting techniques, project cash flows and risk, the cost of capital, capital structure and leverage, dividend policy, common stock financing, long term debt, short-term financing, inventory and credit management. *Prerequisite:* BAF 311.

BAF 315 Financial Institutions and Markets (3.0); 3 cr. This course involves an introduction to the objectives and roles of various financial institutions and markets. Topics covered include various financial intermediaries and their function in the economy, determination of interest rate levels, financial markets, financial claims, distribution channels for financial products, performance analysis, and foreign exchange. *Prerequisite:* BAF 311.

BAF 321 Fundamentals of Investments (3.0); 3 cr. The course aims to introduce a set of basic principles of the investment environment and process in the field of investment. Topics covered include the different asset classes in the financial markets, sources, determination of holding periods, determination of security prices, capital asset pricing models, portfolio selection problems, and investment companies. For Financial Engineering students, the passing grade is "C". *Prerequisite:* BAF 311.

BAF 352 Commercial Bank Management I (3.0); 3 cr. This course covers commercial bank management techniques and policies. Analysis includes performance analysis of banks and asset-liability management with a focus on risk management aspects such as interest rate risk, liquidity risk, credit risk, capital risk, and off-balance sheet risk activities. *Prerequisite:* BAF 312.

BAF 353 Commercial Bank Management II (3.0); 3 cr. This course is a continuation of commercial bank management I course (BAF 352). It covers the fundamental aspects of credit analysis from lending institutions' perspectives. Topics include loan pricing, bank credit policy and loan characteristics, commercial loan evaluations, consumer credit risk management and risk scoring techniques, managing and pricing deposit and non-deposit liabilities, and capital adequacy. *Prerequisite:* BAF 352.

BAF 421 Quantitative Asset Management (3.0); 3 cr. This course is a follow-up to the introductory Investment course and is designed to acquaint the students with the pricing and management of financial assets. Topics are divided into three modules. The first module addresses equities portfolio allocation followed by portfolio performance measurement, rebalancing, and evaluation with an emphasis on global investments. The second module introduces fixed income securities including managing bond portfolios. The third module extends the analysis to include advanced and alternative investment vehicles such as real estate, commodities, hedge funds, and venture capital. *Prerequisite:* BAF 321.

BAF 433 International Business Finance (3.0); 3 cr. The course involves a discussion of the environment and problems facing a financial manager in a multinational enterprise. Topics covered include balance of payments, foreign exchange markets, transactions and operating exposure, financing of international trade, international financial markets, risk evaluation in foreign direct investments, and international banking. *Prerequisites:* BAF 311, ECN 212.

BAF 450 Derivatives (3.0); 3 cr. This course introduces the basic characteristics of options and their markets. The fundamental principles of pricing options are covered. The simple binominal model and the Black-Scholes models for pricing options are explored with direct implementation through real case problem-solving. The course also develops the basic option trading strategies. Finally, the principals for pricing forwards, futures, and options on futures contracts are developed and detailed together with a set of problem solving. *Prerequisite:* BAF 321.

BAF 461 Concepts Market Implementation/Bloomberg (0.1); 0 cr. This is an e-learning course that provides a visual introduction to financial markets. It consists of a series of modules, covering fixed income markets, equities markets, energy, asset management, etc., woven together from Routers data, news, and analytics. *Prerequisite:* Senior Standing.

BAF 481 Finance Internship (1.0); 1 cr. This course provides students with an opportunity to balance their classroom experience with work experience. Thus, it provides students with practical application of theories presented at the University and a chance to participate in on-the-job training and experience. A minimum of 150 hours of internship is required. *Prerequisite:* Senior Standing.

FINANCIAL ENGINEERING

THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION - FINANCIAL ENGINEERING

The BBA in Financial Engineering, (BBA-FEN) aims to coach students to adapt financial theories and models into practice while providing them with all the conceptual knowledge needed, from asset management and derivatives to risk management, in order to be able to ultimately design innovative instruments in the market place.

Degree Requirements (99 credits)

The course requirements in the BBA in Financial Engineering involve a total of 99 credits distributed in the following pools:

Liberal Arts Curriculum **27 cr.**

Common Requirements **37 cr.**
ACO 201, ACO 311, MGT 201, MGT 311, MGT 317, MGT 433, BAF 311*, ECN 211, ECN 212, MAT 204, MRK 201, STA 220.

Major Requirements **35 cr.**
BAF 312, BAF 321*, BAF 352, BAF 421, BAF 450, BAF 461, BAF 481, CSC 372, ECN 313, ECN 333, FEN 442, FEN 452, FEN 455, MAT 336.

* The passing grade for this course is "C"

Undergraduate Courses: Financial Engineering

FEN 442 Financial Risk Management (3.0); 3 cr. This course explores various aspects of financial risk management, including credit risk, market risk, and operational risk. Emphasis is on quantitative measurement techniques, covering value at risk, dynamic portfolio distribution, and extreme value analysis. *Prerequisite:* BAF 450.

FEN 452 Financial Modeling (3.0); 3 cr. This course is a wrap-up of financial, statistical, and computational concepts and techniques needed in the field of Financial Engineering and Computational Finance. Topics include Overview of statistical techniques used in Finance (Regression, Time Series, Sampling, Data Analysis), and an overview of financial concepts, such as financial price simulation, and cash flow maps. *Prerequisite:* BAF 321.

FEN 455 Advanced Derivatives (3.0); 3 cr. This course focuses on options, futures, forward, and swaps at an advanced level. It introduces a framework for pricing derivative securities by arbitrage, the binomial model, and the Black-Scholes formula. It shows how derivative securities are used to achieve various hedging objectives and advanced trading strategies. Designing and valuing swaps are covered. Options on stock indices, currencies, and futures and exotic options are also discussed. Finally, the course includes the practical implementation of speculative trading strategies using options. *Prerequisite:* BAF 450.

THE DEGREE OF MASTER OF SCIENCE IN FINANCIAL RISK MANAGEMENT PROGRAM (MS-FRM)

The Master of Science in Financial Risk Management is a specialized degree. It aims to provide students with a specialization in the field of Financial Risk Management. With adequate effort, graduates will be well prepared to sit for the Financial Risk Manager (FRM®) professional certificate and to pursue education in doctoral programs.

The MS-FRM is designed to attract:

- Financiers, bankers, investors, auditors, and other finance/accounting/insurance Professionals preparing themselves for the next stage in their careers;
- Fresh business and economics graduates preparing themselves to jump-start a career in financial risk management;
- Professionals and business or economics graduates aspiring to pursue doctoral studies in financial risk management or any other subject related to finance; and
- Professionals and graduates of other scientific disciplines, engineering and hard sciences in particular, contemplating a move into the world of finance and risk management.

Mission

The MS in Financial Risk Management (denoted MS-FRM) at NDU aims at providing aspiring candidates with a set of professional and technical skills allowing them to identify and manage various types of financial risk and solidly advance in their chosen pathway, whether that is further academic or professional studies or employment.

Program Learning Outcomes and Goals

General Attributes

LG1: Our graduates will be effective communicators.

Objective 1.1 Students should be able to prepare clear and concise written reports using the appropriate style and structure.

Objective 1.2 Students should be able to deliver effective oral presentations that are well-focused and rigorous.

LG2: Our graduates will be critical thinkers.

Objective 2.1 Students should be able to critically analyze, synthesize, and evaluate alternatives when making decisions.

LG3: Our graduates will have a sound recognition of ethical dimensions in business practice.

Objective 3.1 Students should be able to assess the ethical dimensions in various business situations.

Specific Attributes

LG4: Our graduates will be effective financial risk managers.

Objective 4.1 Students should be able to apply a variety of techniques to manage various types of risks.

Research Skills

LG 5: Our graduates will have research skills.

Objective 5.1 Students should be able to conduct sound research.

Admission Procedures and Requirements

The requirements for entry into the MS-FRM program are:

- BUSINESS AND ECONOMICS GRADUATES
  - An application form duly completed;
  - Two recommendation letters, one of which is from a university professor; and
  - A minimum cumulative undergraduate GPA of 2.7 (or its equivalent)
- OTHER SCIENTIFIC DISCIPLINES GRADUATES

Applicants holding non-bachelor degrees in Business Administration or Economics may be required to take up to 18 credits of remedial courses. A minimum cumulative GPA of "2.7" should be achieved in these courses. The grades of these courses are not included in the overall GPA.

Applicants from institutions where English is not the language of instruction, a minimum score of 60 in the English Entrance Test (EET) is required.

Credit Transfer

Up to 6 relevant Master's level credits can be transferred from other relevant Master's programs. Relevant programs include (non-exhaustive):

- MS, MA, MPhil, or MRes programs in Business/Management;
- MS, MA, MPhil, or MRes programs in Economics or Financial Economics; or
- MBA

Graduation Requirements

Students seeking an MS-FRM must successfully complete a total of 30 credits on either a full- or part-time basis, with an overall average of 3.0/4.0. It is important to note that the minimum passing grade for graduate courses is a C, with a maximum of two Cs permitted throughout the program. The MS program is predominantly composed of structured learning opportunities (taught elements) and discipline-related research components.

The Structure

The MS program consists of a total of 30 Credits of courses. It comprises:

Major Core Courses

A total of 6 major core courses equip students with a solid base in the MS program. These courses are:

FRM	610	Derivatives	3 cr.
FRM	620	Advanced Investment	3 cr.
FRM	630	Economics of Financial Markets	3 cr.
FRM	640	Operational and Liquidity Risk Management	3 cr.
FRM	650	Credit Risk Management	3 cr.
FRM	660	Advanced Value Risk Management	3 cr.

Core Support Courses

The two support courses aim to:

- Increase the MS candidates' awareness of the main theories in the disciplines of Finance and Financial Risk Management;
- Equip the MS candidates with the latest statistical and financial econometric techniques; and
- Provide the relevant training in finance research design, thus allowing them to write robust research proposals and conduct research at the forefront of the discipline.

These courses are:

FRM	665	Quantitative Methods for Finance	3 cr.
FRM	680	Finance Research Methods	3 cr.

Research Project

The final phase of the MS program consists of writing a structured Master's research thesis in the areas of finance, financial risk management, operational risk management, or allied disciplines (financial economics, econometrics, internal controls, etc.) based on an approved research proposal. The Graduate Division provides rules governing the procedures and the management of the MS Thesis.

FRM	690	MS Thesis	6 cr.

Major Core Courses

FRM 610 Derivatives (3.0); 3 cr. This course focuses on options and futures, derivatives, and/or risk management at an advanced level. It presents a detailed but flexible coverage of options, futures, forwards, swaps, and risk management, as well as a solid introduction to pricing, trading, and strategy. It additionally offers an outstanding blend of institution material, theory, and practical applications.

FRM 620 Advanced Investment (3.0); 3 cr. This course is designed to acquaint the student with the concepts of portfolio theory, portfolio management process, investment strategies and analysis with applications to the markets for equities and fixed income securities. The course discusses principles for valuing and managing financial assets such as bonds and stocks. It covers the establishment of appropriate investment objectives, development and construction of portfolio strategies, estimation of risk-return tradeoffs, and evaluation of investment performance and risks. In addition, it focuses on institutional investors such as mutual funds and hedge funds, and also includes coverage of international investing.

FRM 630 Economics of Financial Markets (3.0); 3 cr. The Economics of Financial Markets aims to help students understand the role that financial markets play in the business environment. It also provides an understanding of the underlying institutions that either help financial markets work well or that interfere with the efficient performance of these markets. This course develops a series of applications of principles from finance and economics that explore the connection between financial markets and economy. In addition, it focuses on many public policy issues and examines how the most important players in financial markets, the central banks, operate, how monetary policy is conducted, and possible reforms of the international financial system.

FRM 640 Operational and Liquidity Risk Management (3.0); 3 cr. This course explores two major areas in risk management: operational and liquidity risks. It covers the techniques used to estimate and calculate the risks and the risk VaR applied to real case studies. The Basel II & III frameworks are explored. Also, the dimension of leverage is analyzed and the hedge funds description with their related risks measures are considered.

FRM 650 Credit Risk Management (3.0); 3 cr. This course introduces the structuring and the securitization processes and provides the students with the ability to analyze credit risks and credit derivatives. Topics include pricing and hedging counterparty risks, cash collateralized debt obligations, default risks, and portfolio effects.

FRM 660 Advanced Value Risk Management (3.0); 3 cr. This course examines modern techniques for managing financial risks. It covers the different measurement approaches commonly used in several arenas including investing, hedging and trading. GARCH models are explored together with the EWMA for the volatility estimation and prediction. Copulas, VaR, and stress testing are also studied for the optimization of strategies. *Prerequisites:* 18 Credits.

Core Support Courses

FRM 665 Quantitative Methods for Finance (3.0); 3 cr. This course presents a review of the mathematical models necessary to conduct research in finance and financial risk management and to use a variety of quantitative methods to analyze data and make decisions. It starts with an appraisal of some relevant mathematical and statistical concepts including probability (discrete, continuous, marginal, conditional, joint, etc.) and probability distribution (normal, binomial, Poisson, and exponential). Sampling and sampling distributions, confidence interval estimation, and hypothesis testing will be covered and applied to real finance cases. Then, regression analysis and statistical inferences together with the time series and forecasting analyses will be conducted. The ultimate objective of the course is to lead students to describe large complex data sets, run regression analyses, make quantitative forecasts, create optimization models, and run simulations.

FRM 680 Finance Research Methods (3.0); 3 cr. This course is at a graduate level in the theory and practice of social science research as applied to Finance and Financial Risk Management problems. It covers the following three interrelated areas: (1) research design and data collection, (2) assumptions for discipline-based multivariate data analysis, and (3) contemporary finance theory, thus providing the relevant training allowing students to write robust research proposals and conduct research at the forefront of the disciplines of Finance and other related subjects.

Research Project

FRM 690 MS Thesis (6.0); 6 cr. The MS Thesis is a scholarly research study of Finance topics, preferably related to Financial and/or Operational Risk Management, that is grounded in relevant theories and which uses advanced quantitative/qualitative data analysis techniques. Based on a research proposal approved by the Thesis Committee, the MS Thesis culminates in a report of a minimum of 15,000 words. Graduating students should satisfactorily defend the research design and findings before a grade is assigned. Although not a requirement for graduation, students are expected to submit their work for publication in refereed conference proceedings and/or esteemed journals. *Prerequisites:* FRM 665, FRM 680.

FRM

DEPARTMENT OF MANAGEMENT AND MARKETING

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THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION (BBA) - MANAGEMENT

The BBA Management option is designed to provide students with an understanding of the processes and structures of organizations to enable them to be more effective managers. The courses taken in addition to the required common courses provide the students with proficiency in management skills and decision-making. The program prepares candidates for managerial responsibilities in both the private and public sectors.

Mission

Consistent with the Faculty mission, the Bachelor degree of Business Administration in all of its related tracks adopts an inter-disciplinary perspective to prepare students for real world challenges at the national and international levels. Through dynamic and continuous improvement of curricula, the program aims to prepare students for different career opportunities and further academic studies and professional certifications. Moreover, graduates will be endowed with high ethical standards to act in a socially responsible manner.

Program Goals and Learning Outcomes

Goal 1: General skills:

LG1. Business Knowledge: Our graduates will have comprehensive disciplinary knowledge in business.

Objective 1.1 Students should be able to demonstrate the understanding of core business knowledge in accounting, economics, finance, management, and marketing.

LG2. Critical Thinking: Our graduates will be critical thinkers.

Objective 2.1 Students should be able to critically analyze information to solve business problems using appropriate quantitative and qualitative techniques.

LG3. Communication: Our graduates will be effective communicators.

Objective 3.1 Students should be able to prepare clear and concise written reports using the appropriate style and structure.

Objective 3.2 Students should be able to deliver effective oral presentations that are well-focused and rigorous.

LG 4. Ethical and Social Responsibility: Our graduates will have a sound recognition of the ethical and social impacts of business practice.

Objective 4.1 Students should be able to identify ethical issues in business practice.

Objective 4.2 Students should be able to assess social implications in various business situations.

LG 5. Teamwork: Our graduates will be good team participants.

Objective 5.1 Students should be able to collaboratively and positively participate in teams.

Graduation Requirements

Students seeking a Bachelor of Business Administration - Management Concentration must complete a total of 92 credits with an overall average of at least 2.0/4.0 and a minimum average of 2.3/4.0 in the common core and major requirements. These 92 credits are divided into:

Degree Requirements (92 credits)

Liberal Arts Curriculum **27 cr.**

Required Common Courses **37 cr.**
ACO 201, ACO 311, MGT 201, MGT 311, MGT 317, MGT 433, BAF311, ECN 211, ECN 212, MRK 201, STA 220, MAT 204.

Required Major Courses **25 cr.**
MGT 315, ENT 301, MGT 323, MGT 425, MGT 435, HRM 427, MGT 429, MGT 455, BUS 481.

Elective to Major Course **3 cr.**
MGT 329, ECN 333, MRK 323, MRK 345, MRK 421.

Minor in Management (15 credits)

In response to great demand from our student body, the Department of Management and Marketing has designed a minor in Management. This minor is intended to enhance our students' area of expertise through acquiring knowledge of management theory and its application, which will allow them to be successful members in the global environment. The world in which we live is marked by rapid change where both managers and employees need to handle the changing environment in addition to managing the day-to-day functions in the market-driven economy.

For those students who come from a business background, this minor will enhance their scope and depth in the managerial area. For those who come from another background, a minor in Management will expose them to the key managerial functions of planning, organizing, leading, and controlling, and in so doing so, will increase their level of efficiency and effectiveness in the work context.

Students are required to use the following table:

Course#	Description	Credit	Prerequisite
MGT 201	Fundamentals of Management	3	___
MGT 317	Organizational Behavior	3	MGT 201
MGT 433	Business Policy & Strategic Management	3	Senior Standing
	CHOOSE TWO OF THE FOLLOWING		
ENT 301	Start-up Business	3	Junior Standing
MGT 421	International Business Management	3	Senior Standing
MGT 435	Business Research Methods	3	Senior Standing
MGT 429	Operations Management	3	Senior Standing
MGT 455	Digital Business	3	Senior Standing
HRM 402	Business Negotiations	3	Junior Standing
HRM 411	Leadership, Quality, and Performance	3	Senior Standing
Total		**15 cr.**	

Undergraduate Courses: Business Administration

MGT 101 Introduction to Business (3.0); 3 cr. An orientation on the field of business. Topics covered include types of business organizations, financing of businesses, marketing functions, management functions, human resources management, production management, accounting, and international business.

MGT 201 Fundamentals of Management (3.0); 3 cr. An introduction to the basic elements of the managerial process and the basic theories of management. Topics covered include management objectives, organizational structure, material and human resource utilization, human relations, decision-making, planning, organizing, staffing, directing, and controlling.

MGT 301 Ethics and Responsible Business (3.0); 3 cr. A practical rather than philosophical approach to the ethical dimension of business actions. The course deals with the ethical problem and dilemmas of individuals, managers, and organizations.

MGT 311 Business Law (3.0); 3 cr. Survey of Lebanese Commercial Law. Topics covered include the nature of the law, the courts system, contracts; property sales and secured transactions, insurance, commercial papers, agency, business organizations, bailment, bankruptcy, banking operations, and taxation.

MGT 315 International Business (3.0); 3 cr. An introduction to international business management principles and an overview of global organizations. Topics covered include nature and importance of international business, human, cultural, political, economic and legal considerations in international business, commercial policies, international agreements, international trade and investment, and the international monetary system. *Prerequisite:* MGT 201.

MGT 317 Organizational Behavior (3.0); 3 cr. An examination of the study of individual and group behavior in organizations. Topics covered include perception, motivation, leadership, organizational development, communication, power politics, group behavior; conflicts, and work design. *Prerequisite:* MGT 201.

ENT 301 Start-up Business (3.0); 3 cr. Procedures and techniques needed to start up, purchase and manage a small firm. Emphasis on the differences between small and large firm environments and problems. Topics covered include franchising, market research, site selection, sales and advertising, pricing and credit policies, managing human resources, financial planning, and accounting and budgeting. *Prerequisite:* Junior Standing.

MGT 323 Software Tools for Business Applications (3.0); 3 cr. Application of software to business information processing and decision-making in different business areas. *Prerequisite:* Junior Standing.

MGT 325 International Business Law (3.0); 3 cr. An introduction to the legal aspects and ramifications of international trade. Topics covered include international business transactions such as sales contracts, agency and distribution contracts, investment contracts, licensing agreement, joint ventures, intellectual property, arbitration,; dispute settlement before the WTO, problems in foreign investment, tariff regulation, taxation regulation, and technology transfer. *Prerequisite:* MGT 311.

MGT 329 Labor and Social Security Law (3.0); 3 cr. Exploration of individual and collective aspects of employment in Lebanon. Topics covered include employment contract, duties of employers and employees, impact of legislation providing for health, safety and

welfare, workers' compensation, industrial disputes, strikes, and social security law. *Prerequisite:* MGT 311.

MGT 421 International Business Management (3.0); 3 cr. An examination of management problems of organizations with international interests. Topics covered include nature and role of international business management, impact of cultural, political, social and economic factors on management policies and practices, strategic planning, organizing international operations, human resource management in international corporations, managing foreign exchange risk, production and marketing, asset management, and ethics and social responsibility. *Prerequisite:* Senior Standing.

MGT 425 Quantitative Techniques for Management (3.0); 3 cr. Quantitative techniques in problem solving and decision making using mathematical methods and modeling. Topics covered include linear programming, network models, Markov analysis, queuing theory, decision theory, project management, and simulations. *Prerequisite:* Senior Standing.

MGT 429 Operations Management (3.0); 3 cr. Introduction to the concepts, techniques and methodology of modern operations management. Topics covered include forecasting, production planning and scheduling, facility location and layout, quality control, productivity, inventory systems, process design, maintenance, and reliability. *Prerequisite:* Senior Standing.

MGT 433 Business Policy and Strategic Management (3.0); 3 cr. A capstone course in management. Understanding of strategies pursued by contemporary organizations. Integration of concepts and skills previously learnt, utilizing readings, projects, simulations, and case studies. Emphasis on the strategic issues facing domestic and international firms. *Prerequisite:* Senior Standing.

MGT 435 Business Research Methods (3.0); 3 cr. This course explores the research process practices that are applied to the field of business. It equally aims at expanding the grasp of diverse research methodologies so as to train students to work on the research projects they will be handling in their different business disciplines. An analysis of pertinent research literature in business is conducted. Experience is acquired in making out and stating research problems, in deciding on and utilizing the suitable research methods, whether quantitative or qualitative, in devising a research project, as well as in gathering, investigating, recording, deciphering data and presenting the research outcomes. Students will learn how to use SPSS, the leading statistical software for social sciences. Through their practicing of the research process and SPSS, students will become more proficient and assertive while assessing research findings in their respective areas of specialization. If successfully completed, this course should enable students to carry out their own research proposals and projects. *Prerequisite:* Senior Standing.

MGT 455 Digital Business (3.0); 3 cr. The emergence of the digital economy has unlocked new opportunities for businesses, while simultaneously creating new modes of competition in both traditional and new sectors of the economy. Many organizations are becoming increasingly digital, in order to capture value from new innovations, by cutting costs, enhancing performance, and delivering new services. This course provides insight into the emergence of digital business, key concepts, technologies, and strategic organization. Students will develop a strategic plan for a traditional business which could adopt digital technologies and strategies and will present the plan as a business pitch. This course discusses the foundations and key aspects of Digital Business while focusing on the latest developments in the e-commerce and e-marketing industry. Practical case studies offer a useful reference for dealing with various issues such as latest applications, management techniques, and marketing tools. *Prerequisite:* Senior Standing.

BUS 481 Business Internship (1.0); 1 cr. This course provides students with an opportunity to balance their classroom experience with work experience. Thus, it provides students with practical application of theories presented at the university and a chance to participate in on-the-job training and experience. Interns will have the opportunity to acquire job-related skills by working under the direction and supervision of an experienced practitioner. The course will permit them to gain hands-on knowledge about their field of interest, improve their communications skills, and gain confidence and experience in a work setting. *Prerequisite:* Senior Standing.

INTERNATIONAL BUSINESS MANAGEMENT

THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION (BBA) - INTERNATIONAL BUSINESS MANAGEMENT

Economic and business activity is becoming increasingly internationalized. There is a great demand for business students who are equipped with conceptual and analytical skills and can formulate feasible and effective management policies in a complex international setting. The objective of the BBA-International Business Management is to respond to this need.

The program provides useful preparation for careers in a variety of organizations, including local business firms with international trade, licensing or financial arrangements, headquarters or subsidiaries of multinational companies, banks and other international financial institutions, and various governmental organizations.

Graduation Requirements
Students seeking a BBA-International Business Management Concentration must complete a total of 92 credits with an overall average of at least 2.0/4.0 and a minimum average of 2.3/4.0 in the core and concentration requirements. These 92 credits are divided into:

Degree Requirements (92 credits)

Liberal Arts Curriculum **27 cr.**

Required Common Courses **37 cr.**
ACO 201, ACO 311, MGT 201, MGT 311, MGT 317, MGT 433, BAF 311, ECN 211, ECN 212, MRK 201, STA 220, MAT 204.

Required Major Courses **25 cr.**
MGT 315, MGT 323, MGT 421, MGT 435, BUS 481, ECN 431, BAF 433, MRK 315, MRK 423.

Elective to Major Course **3 cr.**
ENT 301, MGT 325, HRM 427, MGT 429, MGT 455, ECN 333, ECN 439, MRK 425.

ENTREPRENEURSHIP EMPHASIS

THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION (BBA) - ENTREPRENEURSHIP EMPHASIS

Entrepreneurship in the modern millennium is not only the cornerstone of business management and marketing but also that of the mobile global community. Whether the creative spark of innovation is social, corporate, acquired, or start-up-based, it impacts people, organizations, and the modern world.

The Faculty of Business Administration and Economics currently offers a Bachelor in Business Administration degree with various concentrations. Within a proactive Faculty, the Department of Management and Marketing unlike that in any other School of Business in Lebanon, proposes a BBA-Entrepreneurship concentration that is customizable. The new undergraduate concentration cultivates an understanding and practice of entrepreneurship that complements its holder's areas of expertise. This concentration builds and expands entrepreneurial skills essential not only to students in the Faculty of Business Administration and Economics but across faculties at Notre Dame University-Louaize (NDU).

Within this concentration, educators, researchers, and practitioners work with students to foster and nourish an entrepreneurial spirit, an experiential, and interdisciplinary approach as students acquire a liberal arts general education framework. Students start their journey learning how to perceive a need in the market, use feasibility studies to better understand and develop that "need" into a business plan, then pitch, look for funds, and finally set up a business through brainstorming, critical thinking, designing, formulating, and implementing their ideas inside the Entrepreneurial Lab, classes, and the market. MoUs with private and/or public incubators are being generated exclusively to support this entrepreneurship program.

The main competitive advantage of this program is that it offers the possibility of tailoring the curriculum according to the business venture idea. Students will be able to choose those courses that will best match their start-up plan. This program is also interdisciplinary: it was built based on a comparative curricular study and was adjusted upon the review of two experts from the field.

In short, the concentration allows university students to step outside the box of standardized curricula. Learning is customized whereby each entrepreneurial degree is unique. Five concentrations allow students to design their own degree in terms of Human Relations, Marketing, Track, Interdisciplinary, and Communications, thereby preparing them to join the job market immediately.

Consistent with the Faculty of Business Administration and Economics mission, the entrepreneurial concentration provides academic rigor and career preparation of a liberal arts academic environment even though the concentration is customized. By the end of the program, graduates will have learned essential courses and be entrepreneurs in the mobile global community.

Graduation Requirements
Students seeking a Bachelor of Business Administration in Marketing must complete a total of 92 credits with an overall average of at least 2.0/4.0 and a minimum average of 2.3/4.0 in the core and concentration requirements.
These 92 credits are divided into:

Degree Requirements (92 credits)

Liberal Arts Curriculum	**27 cr.**
Required Common Courses ACO 201, ACO 311, MGT 201, MGT 311, MGT 317, MGT 433, BAF 311, ECN 211, ECN 212, MRK 201, STA 220, MAT 204.	**37 cr.**
Required Major Courses	**28 cr.**

Major courses
ENT 301, ENT 455, ENT 475, MGT 429, BUS 481.

Elective to Major Course
Select one 3-credit course from each basket:

Human Relations:	HRM 427, HRM 402, HRM 411.
Management & Marketing:	MRK 321, MGT 455, MGT 435.
Track:	ENT 320, ENT 330, ENT 340.
Interdisciplinary:	Other Disciplines
Public Relations:	MRK 313, JOU 340.

Minor in Entrepreneurship (15 credits)

Rationale
The Entrepreneurship minor is designed to help students who have an idea, a product, an innovation, unique expertise, or a solution to a real world problem that they want to develop into a new business. It fosters the spirit of entrepreneurialism which answers a growing market demand amongst Lebanese youths.

Students will learn about the core challenges facing entrepreneurs and the ways that entrepreneurs think about and approach these challenges. Courses develop competencies such as how to discover and evaluate new business opportunities, how to pitch and build support for your new business, how to finance the new venture, how to develop a strong business model, and how to craft a powerful business plan. Students who complete the Entrepreneurship Minor will have developed an understanding of the process of entrepreneurship and the essential factors needed for the successful growth of a new venture.

The entrepreneurship minor pairs well with many major outside of the Business Faculty and is thus open to students in all Faculties. The program complements a student's major and encourages them to find creative and innovative ways to apply their knowledge.

Why a minor in Entrepreneurship at NDU?
The growing number of established business incubators around the country in the past few years is one of many explicit indicators of an identified increasing entrepreneurship trend in the Lebanese market. This emerging trend is accompanied by an increasing need for technical, practical, and academic support to be provided to young entrepreneurs. Thus, NDU is seizing this opportunity by offering a Minor in Entrepreneurship to students who are pursuing their studies in different majors and have the intention and the aspiration to start their own business. Students coming from any major are potential candidates for this minor: civil engineering, mechanical engineering, computer science, architecture, nutrition, education, graphic design, fashion design, or even nursing (if they have a business idea in mind such as starting a home nursing agency for example), just to name few.

It is important to note that if NDU decides to start this minor, it will be the first and currently the only higher education institution offering this minor. This minor is not currently offered by any university in Lebanon.

Rules and regulations
- All the general rules and regulations for a minor at NDU apply.
- Number of credits for the minor: 15 credits.

Students are required to use the following table:

Course #	Description	Credits	Prerequisite
ENT 301 Or ENT 302	Startup Business Launching New Ventures	3 3	For FBAE students For students from all Faculties except FBAE
ENT 455	Design Thinking and Innovation	3	Senior Standing
	CHOOSE ONE OF THE FOLLOWING		
MRK 321	Promotional Strategy	3	
MGT 455	Digital Business	3	-
MGT 435	Business Research Methods	3	Senior Standing
	CHOOSE ONE OF THE FOLLOWING		
ENT 320	Franchising and Licensing	3	ENT 301
ENT 330	Social Entrepreneurship	3	ENT 301
ENT 340	Family Business Management	3	ENT 301
	CHOOSE ONE OF THE FOLLOWING		
HRM 427	Human Resource Management	3	MGT 317
MGT 429	Operations Management	3	Senior Standing
HRM 411	Leadership, Quality and Performance	3	Senior Standing
HRM 402	Business Negotiations	3	Senior Standing
MRK 313	Salesmanship	3	MRK 201

Undergraduate Courses: Entrepreneurship

ENT 301 Start-up Business (3.0); 3 cr. Start-up Business will facilitate student discovery into what it means to be enterprising, as well as offer insights into being an entrepreneur. This is a course that offers students an opportunity to develop the practical skills required to create and sustain a new venture. With tutorial guidance, students will work in teams to select an entrepreneurial idea and develop it into a written business plan for subsequent presentation and discussion. *Prerequisite:* MGT 201.

ENT 302 Launching New Ventures (3.0); 3 cr. This course provides specialized instruction to both theory and the practical application necessary for the operation of a successful business. It is designed for students from all disciplines who feel they have entrepreneurial skills and want to study the process and skills required to go into business themselves. Subjects covered include feasibility, managerial issues, industry, and competitor analysis, among others. By the end of the course, students will have completed a detailed business plan and will have acquired the skills for a business start-up.

ENT 320 Franchising and Licensing (3.0); 3 cr. This course will expose students to the history and elements of franchising. The regulations and the structures underlying franchising agreements will be uncovered in addition to case studies that expose the challenges to success for both franchisees and franchisors under different and challenging circumstances within various industries. The legal and regulatory requirements associated with franchising and licensing will be highlighted and the elements that might point towards choosing an adequate franchise will be explored. Finally, the forms of licensing and the types of licensed products will be highlighted as well as the best licensing practices and the pros and cons of licensing agreements. *Prerequisite:* ENT 301.

ENT 330 Social Entrepreneurship (3.0); 3 cr. Social entrepreneurship is a fast and growing field of academic study and real world practice. It differs from traditional forms of entrepreneurship as its goal is to address social problems and needs that are unmet. Social entrepreneurs combine skills and knowledge used in business with a passionate commitment to ensuring a significant and sustainable social impact. This course introduces students to social entrepreneurship through experiential, interactive, and collaborative workshops. *Prerequisites:* ENT 301 or ENT 302.

ENT 340 Family Business Management (3.0); 3 cr. This course develops students' understanding of family businesses and explores the issues of ownership, management, and personal development found in these areas. Family Business Management enhances students' analytical capabilities and skills to gather information, mobilize resources, and engage in the planning needed to face the challenges encountered by business-owning families. Students in the course will learn about the venture, growth, exit, and failure of a business amidst the unique governance structure of family business. Discussions will engage students in topics including separating family and work life, structures and board members, succession planning and inheritance rights, children of owners and their roles, sibling rivalry, family expectations, negotiations among family members, managing transitions in corporate structures, and multigenerational issues and filling that gap. *Prerequisites:* ENT 301 or ENT 302.

ENT 455 Design Thinking and Innovation (3.0); 3 cr. This course provides students with an interactive, highly dynamic, and deeply experiential approach to leading user-centric innovation in a corporate setting. Design thinking combines creative and critical thinking that allow information and

ideas to be organized, decisions to be made, situations to be improved, and knowledge to be gained. During the course, students will learn creative problem-solving techniques, a structured approach to innovation that combines best breed of design thinking, innovation, creativity, leadership, and entrepreneurship. This course will embrace multiple schools of thought, including design thinking, systems thinking, entrepreneurship, and business strategy, thus helping students develop skills in rapid idea generation and opportunity recognition while maintaining the customer need at the center. *Prerequisites:* ENT 301 or ENT 302.

ENT 475 New Venture Creation (3.0); 3 cr. This course is an integrative capstone learning experience that extends to two academic semesters, in which students get the opportunity to transform their entrepreneurship knowledge into a practical one by appealing to tenders of investors. With close guidance of the practicum faculty, students will get to individually fine-tune their business plan crafted in ENT 301 and go through the different steps of creating a new venture with a focus on the specific challenges faced. Students will provide status reports on a weekly basis to the practicum faculty and receive regular coaching. Students will defend at the end of their second semester their complete venture plan in front of a jury. Coaching topics covered include pitching, prototyping, early adopters targeting, revenues and business model testing, and outreach plans. A minimum of 600 hours of practicum is required. *Prerequisite:* Senior standing.

BUS 481 Business Internship (1.0); 1 cr. This course provides students with an opportunity to balance their classroom experience with work experience. Thus, it provides students with practical application of theories presented at the University and a chance to participate in on-the-job training and experience. Interns will have the opportunity to acquire job-related skills by working under the direction and supervision of an experienced practitioner. The course will permit them to gain hands-on knowledge about their field of interest, have the opportunity to improve their communications skills, and gain confidence and experience in a work setting. *Prerequisite:* Senior Standing.

MARKETING

THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION (BBA) - MARKETING

The Marketing curriculum is organized around a managerial framework to provide students with an understanding of the operations and problems associated with getting the wide range of products and services required by modern society from the producer to the user. Students learn to successfully confront problems in a variety of areas and to make sound marketing decisions based on careful analysis.

Marketing is a dynamic profession. There is a wide range of opportunities in marketing, including marketing management, marketing research, purchasing management, market analysis, product/brand management, retailing, sales promotion, social marketing, and international marketing.

Graduation Requirements
Students seeking a Bachelor of Business Administration in Marketing must complete a total of 92 credits with an overall average of at least 2.0/4.0 and a minimum average of 2.3/4.0 in the core and concentration requirements.
These 92 credits are divided into:

Degree Requirements (92 credits)

Liberal Arts Curriculum **27 cr.**

Required Common Courses **37 cr.**
ACO 201, ACO 311, MGT 201, MGT 311, MGT 317, MGT 433, BAF 311, ECN 211, ECN 212, MRK 201, STA 220, MAT 204.

Required Major Courses **25 cr.**
MRK 311, MRK 313, MRK 321, MRK 325, MGT 455, MRK 423, MGT 435, MRK 433, BUS 481.

Elective to Major Course **3 cr.**
MRK 215, MRK 315, MRK 323, MRK 421, MRK 425, MGT 323, ENT 301, ECN 333.

Minor in Marketing Management (15 credits)

The Marketing Management minor was developed to allow students to broaden their intellectual base and increase their employment opportunities. Many University graduates obtain entry-level jobs, which not only allow them to apply the knowledge obtained in their major field, but also require an understanding of marketing principles and practices as prerequisites for success.

Students will be able to successfully confront problems in areas of marketing management, marketing research, purchasing management, market analysis, product management, retailing sales promotions, and international marketing.

Students are required to use the following table:

Course #	Description	Credits	Prerequisite
MRK 201	Fundamentals of Marketing	3	___
MRK 311	Consumer Behavior	3	MRK 201
MRK 421	Sales Management	3	Senior Standing
	CHOOSE TWO OF THE FOLLOWING		
MRK 205	Principles of Channel Management	3	MRK 201
MRK 313	Salesmanship	3	MRK 201
MRK 321	Promotional Strategy	3	
MRK 325	Services Marketing	3	MRK 311
MRK 423	International Marketing	3	MRK 201
MGT 435	Business Research Methods	3	Senior Standing
MGT 455	Digital Business	3	___
MRK 433	Marketing Strategies and Policies	3	Senior Standing
Total		**15 cr.**	

DISTRIBUTION AND LOGISTICS MANAGEMENT

THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION (BBA) - DISTRIBUTION AND LOGISTICS MANAGEMENT

This concentration is designed to offer knowledge in the field of supply chain management and to build candidates' capacities in all of its major components namely: packaging, warehousing, procurement, transportation, inventory, and physical distribution management.

Manufacturers, wholesalers, retailers, public warehouse firms, freight forwarders as well as public and private transportation firms carry out the distribution and logistics management activities with heavy dependence on innovative technological breakthroughs in this field. Globalization, the increasing demand for the movement of goods across the world, and the applied knowledge required by the candidates will be the focal learning points.

Graduation Requirements
Students seeking a Bachelor of Business Administration in Distribution and Logistics Management must complete a total of 92 credits with an overall average of at least 2.0/4.0 and a minimum average of 2.3/4.0 in the core and concentration requirements.
These 92 credits are divided into:

Degree Requirements (92 credits)

Liberal Arts Curriculum **27 cr.**

Required Common Courses **37 cr.**
ACO 201, ACO 311, MGT 201, MGT 311, MGT 317, MGT 433, BAF 311, ECN 211, ECN 212, MRK 201, STA 220, MAT 204.

Required Major Courses **25 cr.**
MRK 205, MRK 215, MRK 315, MRK 323, MRK 335, MRK 345, MRK 422, BUS 481, MGT 323.

Elective to Major Course **3 cr.**
MRK 311, MGT 455, MRK 404, MRK 421, MRK 423, MRK 425, MGT 435, ENT 301.

Minor in Distribution and Logistics Management (15 credits)

The minor in Distribution and Logistics provides graduates with added knowledge in the areas of transportation, logistics, inventory management, as well as other aspects of Distribution and Logistics. Such knowledge, once applied, will enhance students' effectiveness and efficiency in the workplace.

Manufacturers, wholesalers, retailers, public warehouse firms, freight forwarders, and public and private transportation firms carry out distribution management activities. Careers in distribution management provide an individual with the potential for rapid advancement within a firm.

Students are required to use the following table:

Course #	Description	Credits	Prerequisite
MRK 201	Fundamentals of Marketing	3	___
MRK 205	Principles of Channel Management	3	MRK 201
MRK 335	Materials & Warehouse Management	3	MRK 205
	CHOOSE TWO OF THE FOLLOWING		
MRK 215	Fundamentals of Purchasing	3	MRK 201 and Junior Standing
MRK 315	Import-Export Management	3	MGT 315, MRK 311
MRK 323	Retail Management	3	MRK 201
MRK 422	Packaging, Warehousing & Inventory Control	3	MRK 335
MRK 345	Logistics & Supply Chain Management	3	MRK 205
MRK 404	Transportation Management	3	MRK 345
MRK 425	Business to Business Marketing	3	MRK 423
Total		**15 cr.**	

Undergraduate Courses: Marketing

MRK 201 Fundamentals of Marketing (3.0); 3 cr. Introduction to the marketing process in social, economic, and legal environments. Topics covered include consumer and institutional behavior patterns, market segmentation, product and service development, pricing strategy and promotion, channels of distribution, retailing and wholesaling, and marketing research.

MRK 205 Principles of Channel Management (3.0); 3 cr. This course surveys, organizes, and integrates theories and practices relative to current issues of marketing channel management, with a focus on key strategic marketing principles. Physical distribution is reviewed as a functional area within the firm and its interface with channel intermediaries is analyzed. Topics include retailing, wholesaling, industrial marketing, transportation, warehousing, location, inventory control, and channel design. *Prerequisite:* MRK 201.

MRK 215 Fundamentals of Purchasing (3.0); 3 cr. This course is designed to present the purchasing process as it relates to such topics as inventory control, price determination, vendor selection, negotiation techniques, and ethical issues. The focus of the course will be on the role and function of purchasing in the Logistics Management Process. *Prerequisite:* MRK 201.

MRK 311 Consumer Behavior (3.0); 3 cr. Concepts and theories to explain the decision-making process of consumer and organizational buying. Attention is focused on economic, psychological, sociological, and anthropological variables to understand, predict, and control purchasing behavior. *Prerequisite:* MRK 201.

MRK 313 Salesmanship (3.0); 3 cr. Examination of persuasive techniques used in promotional presentations conducted on a person-to-person basis. Emphasis on effective selling techniques, understanding the company and its products, understanding the customer and the selling environment, recognizing selling opportunities, and planning, implementing, and control of the personal selling programs. *Prerequisite:* MRK 201.

MRK 315 Import-Export Management (3.0); 3 cr. Application of management theories to efficient management of an import-export business. Topics covered include starting an import-export business, international trade, export financing, import-export documentation, export promotion, and tariffs and duties. *Prerequisites:* MRK201 and Junior Standing.

MRK 321 Promotional Strategy (3.0); 3 cr. Introduction to various promotional strategies adopted by different companies and guidelines for determining a company's promotional mix. Topics covered include advertising, personal selling, publicity and promotion, determination of objectives and budgets, and situation analysis. Also, discussion of managerial issues and problems.

MRK 323 Retail Management (3.0); 3 cr. Application of management and marketing theories to retailing. Topics covered include management, organization and control of retail outlets, consumer behavior, store location, financial management, promotion, presentation, pricing, control of inventories, advertising, personnel, and wholesaler-retailer relationship. *Prerequisite:* MRK 201.

MRK 325 Services Marketing (3.0); 3 cr. An introduction to the distinctive aspects of service marketing. Topics covered include understanding services marketing, improving service quality and productivity, positioning a service in the marketplace, managing the customer portfolio, creating and delivering services, and developing and managing the customer service function. *Prerequisite:* MRK 311.

MRK 335 Materials and Warehouse Management (3.0); 3 cr. This course covers the organization and operations of warehouses and distribution centers. Topics covered include the role, types, and functions of warehouses and distribution centers, location

analysis, facility layout and design, equipment handling, employee safety, public and private warehouses, computer control and tracking, conveyance equipment, and hazardous material handling. *Prerequisite:* MRK 205.

MRK 345 Logistics and Supply Chain Management (3.0); 3 cr. This course develops an integrated approach to the analysis of physical distribution problems. It deals with transportation and assignment problems, application of network techniques to production, distribution systems design, optimal allocation of inventory, cost allocation methods; pricing policies, and power structure of shareholders within a firm. *Prerequisite:* MRK 205.

MRK 404 Transportation Management (3.0); 3 cr. This course includes an introduction to the principles of transportation with an emphasis on transportation modal operations (e.g. rail, highway, air, pipeline, and water transportation) and transportation management. Consideration is given to the economic, social, and political aspects of the transportation industry and strategic issues in transportation management. *Prerequisite:* MRK 345.

MRK 421 Sales Management (3.0); 3 cr. Development, operation, and control of a sales organization. Topics covered include managing the sales force, selecting, training, and compensating the sales force, forecasting sales and establishing budgets structuring a sales organization, and motivating sales people. *Prerequisite:* Senior Standing.

MRK 422 Packaging, Warehousing and Inventory Control (3.0); 3 cr. The course deals with important supports for a modern material handling process. Among other things, it discusses packaging and carriers, and their importance to logistics. Furthermore, it deals with systems and IT tools for material handling, such as Warehouse Management Systems (WMS), bar codes and other identification systems, transport administration systems, and systems for controlling material flows in logistical networks. The course also gives an overview of material handling equipment, such as forklifts, storage systems, bar code scanners etc. *Corequisite:* MRK 335.

MRK 423 International Marketing (3.0); 3 cr. Analysis and strategies for marketing in an area with different social, political, legal, and economic environment. Topics covered include cross-national consumer behavior, direct foreign investment, strategy of international product development, pricing, promotion and distribution policies, and forms of international involvement. *Prerequisites:* MRK 201, Junior Standing.

MRK 425 Business-to-Business Marketing (3.0); 3 cr. Development of principles of distribution of industrial goods and management of industrial marketing organizations. Topics covered include industrial marketing system and organization buying behavior, management of industrial marketing mix, industrial market research, planning, pricing, selling, and advertising decisions, and strategies for industrial markets. *Prerequisites:* MRK 201, Senior Standing.

MRK 433 Marketing Strategies and Policies (3.0); 3 cr. A capstone course in marketing. Emphasis on strategic and executional issues connected to marketing policy. Integration of materials previously taken, utilizing readings, projects, and case studies. *Prerequisite:* Senior Standing.

BUS 481 Business Internship (1.0); 1 cr. This course provides students with an opportunity to balance their classroom experience with work experience. Thus, it provides students with practical application of theories presented at the University and a chance to participate in on-the-job training and experience. Interns will have the opportunity to acquire job-related skills by working under the direction and supervision of an experienced practitioner. The course will permit them to gain hands-on knowledge about their field of interest, the opportunity to improve their communications skills, and gain confidence and experience in a work setting. *Prerequisite:* Senior Standing.

HUMAN RESOURCES MANAGEMENT

THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION (BBA) - HUMAN RESOURCE MANAGEMENT

Today, corporations consider Human Resource Management as a strategic partner in order to help them achieve a competitive advantage. The Human Resource Management concentration stresses both strategic and operational aspects through theories, policies, and practices of Human Resource Management in a firm. Topics learned cover employee staffing as well as recruitment and selection, training and development, performance appraisal and compensation and benefits administration, job analysis and design as well as labor-management relations.

Graduation Requirements

Students seeking a Bachelor of Business Administration in Human Resource Management must complete a total of 92 credits with an overall average of at least 2.0/4.0 and a minimum average of 2.3/4.0 in the core and concentration requirements.
These 92 credits are divided into:

Degree Requirements (92 credits)

Liberal Arts Curriculum **27 cr.**

Required Common Courses **37 cr.**
ACO 201, ACO 311, MGT 201, MGT 311, MGT 317, MGT 433, BAF 311, ECN 211, ECN 212, MRK 201, STA 220, MAT 204.

Required Major Courses **25 cr.**
HRM 201, HRM 210, HRM 312, HRM 325, HRM 337, HRM 453, MGT 329, BUS 481, HRM 475.

Elective to Major Course **3 cr.**
ENT 301, HRM 402, HRM 411, MGT 323, MGT 429.

Minor in Human Resource Management (15 credits)

Human Resource plays a key role in private and public-sector organizations. The minor in Human Resource Management is designed to provide students with the required skills to deal with the human aspect of organizations including appraisal systems, team management, communications, dispute resolution, and human resource planning.

Students are required to use the following table:

Course No.	Description	Credits	Prerequisite
HRM 201	Principles of Human Resource Management	3	___
HRM 210	Organizational Staffing	3	HRM 201
HRM 325	Compensation and Reward Systems	3	Junior Standing
	CHOOSE TWO OF THE FOLLOWING		
HRM 402	Business Negotiations	3	Senior Standing
HRM 312	Training and Career Development	3	Junior Standing
HRM 337	Recruitment and Selection	3	HRM 210
HRM 411	Leadership, Quality and Performance	3	Senior Standing
MGT 317	Organizational Behavior	3	MGT 201
HRM 453	Global Human Resource Management	3	Senior Standing
Total		**15 cr.**	

[1] Minimum passing grade is "C"

Undergraduate Courses: Human Resources Management

HRM 201 Principles of Human Resource Management (3.0); 3 cr. Theories, policies, and practices of human resources management in a firm. Topics covered include employee selection, training and development, performance appraisal and compensation, job analysis and design, benefits administration, and labor-management relations.

HRM 210 Organizational Staffing (3.0); 3 cr. This course provides an in-depth examination of the organizational staffing process. Procedures for human resources needs assessment such as personnel audits and forecasting are discussed. Recruitment strategies and the process of organizational choice of candidates are explored. There is an emphasis on understanding basic types of assessment tools and procedures for choosing new employees. *Prerequisite:* HRM 201.

HRM 312 Training and Career Development (3.0); 3 cr. The course is an advanced study of personnel training and development in contemporary organizations. Emphasis is placed on the identification of training needs, program design, selection of training methods, monitoring the process, and evaluating the results. *Prerequisites:* HRM 201, Junior Standing.

HRM 325 Compensation and Reward Systems (3.0); 3 cr. This course provides the study of labor markets and examines the general structure of an organization and the rewards employees seek in exchange for their services and contributions to the firm. Topics covered include developing pay structures, measuring performance, providing employee benefits, rewards, and a motivating work environment, and administering compensation plans. *Prerequisites:* HRM 201, Junior Standing.

HRM 337 Recruitment and Selection (3.0); 3 cr. The objective of this course is to describe to students how organizations search for prospective employees and influence them to apply for available jobs. It is an advanced study of recruitment and selection practices of organizations. *Prerequisite:* HRM 210.

HRM 402 Business Negotiations (3.0); 3 cr. Negotiation permeates human interactions. It affects the balance and distribution of resources among nations, organizations, families, and individuals. Students will understand the theory behind successful negotiation, recognize situations that call for negotiation, and study the utilization of alternative negotiating strategies and tactics. *Prerequisite:* Senior Standing.

HRM 411 Leadership, Quality and Performance (3.0); 3 cr. The purpose of this course is to focus on the major traits, which come together in a leader to produce leadership. Theory, power, motivation, and communication, this course explores the causes and consequences of effective leadership in organizations. *Prerequisite:* Senior Standing.

HRM 427 Human Resource Management (3.0); 3 cr. Theories, policies, and practices of human resource management in a firm. Topics covered include employee selection, training and development, performance appraisal and compensation, job analysis and design, benefits administration, and labor-management relations. *Prerequisite:* MGT 317.

HRM 453 Global Human Resource Management (3.0); 3 cr. This course is designed to help students develop skills as global managers and to provide them with an understanding of critical issues in the management of multinational organizations. Topics covered include international leadership skills, cross-cultural negotiations, ethical dilemmas in cross-cultural environments, and designing and managing multinational organizations. *Prerequisite:* Senior Standing.

HRM 475 Managing Employment Relations (3.0); 3 cr. This course provides an overview of the relationships between human resources and parties to employment. It considers contract negotiations, discipline and grievance procedures, and human resources department assistance in conflict resolutions. Special attention is given to the organizational structure of the parties and their diversified objectives. *Corequisites:* HRM 210, MGT 329.

BUS 481 Business Internship (1.0); 1 cr. This course provides students with an opportunity to balance their classroom experience with work experience. Thus, it provides students with practical application of theories presented at the University and a chance to participate in on-the-job training and experience. Interns will have the opportunity to acquire job related skills by working under the direction and supervision of an experienced practitioner. The course will permit them to gain hands on knowledge about their field of interest, the opportunity to improve their communications skills, and gain confidence and experience in a work setting. *Prerequisite:* Senior Standing.

Self-Designed Interdisciplinary Minor Program

NDU aims to provide students with the programs they need for their future and offers them the opportunity to design their own Self-Designed Interdisciplinary Minor program. Students who would like to explore this option have to fill in the minor proposal with the collaboration of the concerned Faculty and Office of the Registrar. For guidelines, rules, and regulations of the Self-Designed Interdisciplinary Minor, kindly refer to the Office of the Registrar.

BUSINESS ADMINISTRATION

THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION PROGRAM (MBA)

The MBA program provides students who have distinct academic ability with advanced business and management skills. It also targets practicing managers who aim to develop their capabilities and access to higher positions in their chosen careers.
Although the program is designed as a terminal degree program, graduates are well-prepared to pursue higher degrees in business and economics.

Mission
Consistent with the Faculty mission, the MBA program at NDU aims to provide aspiring candidates, of various professional and educational backgrounds, with a set of theoretical knowledge and technical skills allowing them to make informed business decisions in a socially responsible manner. The program equips them with the competencies necessary to advance in their careers or pursue further education, as well as being active players in local, regional, and international markets.

Program Learning Outcomes and Goals
General Attributes

LG1: Our graduates will be effective communicators.
Objective 1.1 Students should be able to prepare clear and concise written reports using the appropriate style and structure.
Objective 1.2 Students should be able to deliver effective oral presentations that are well-focused and rigorous.

LG2: Our graduates will be critical thinkers.
Objective 2.1 Students should be able to critically analyze, synthesize, and evaluate alternatives when making decisions.

LG3: Our graduates will have a sound recognition of ethical dimensions in business practice.
Objective 3.1 Students should be able to assess the ethical dimensions in various business situations.

LG4: Our graduates will have leadership attributes.
Objective 4.1 Students should be able to effectively lead a team.

LG5: Our graduates will integrate knowledge from different business disciplines in their decision-making.
Objective 5.1 Students should systematically analyze complex different business problems while incorporating core business knowledge in economics, finance, management, and marketing.

LG 6: Our graduates will have research skills.
Objective 6.1 Students should be able to conduct sound research.

Admission Procedures and Requirements
In addition to the general University requirements, applicants to the MBA program should submit the following documents:

- The application form;
- Two recent photographs;
- Official transcripts from the university of origin with a minimum cumulative GPA of 2.7 or its equivalent;
- Two recommendation letters (at least one from a former professor);
- Curriculum Vitae
- Employment Letters specifying present position and years of service.

Applicants coming from institutions where English is not the language of instruction, a minimum score of 60 in the English Entrance Test (EET) is required.

Eligibility for Admission
A composite score, consisting of weighted criteria, will be used to determine the eligibility of graduate applicants. Applicants to the MBA program could be:

- Admitted; and
- Admitted on probation; students should obtain a minimum cumulative GPA of 3.0/4.0 upon completing 12 credits of graduate courses.

Applicants holding non-bachelor degrees in Business Administration or Economics may be required to take up to 18 credits of remedial courses. A minimum cumulative GPA of "2.7" should be achieved in these courses. The grades of these courses are not included in the overall GPA.

Graduation Requirements
Students seeking a Master of Business Administration must successfully complete a total of 39 credits on either a full- or part-time basis, maintaining a minimum overall average of 3.0/4.0. It is important to note that the minimum passing grade for graduate courses is a C, with a maximum of two Cs permitted throughout the program.
A student, guided by his or her advisor, can opt for an emphasis area by selecting specific Professional Enhancement Courses in Project Management, or choose these courses from the different areas of emphasis (as elective courses) and opt for a General MBA.

NDU is a PMI-REP (Project Management Institute-Registered Education Provider).
If a candidate follows the MBA Program with Project Management emphasis, it would equip him or her with the necessary competencies, with pre-approved PDUs, to pass the PMP exam or maintain his or her certification.

The Structure
The MBA Program consists of 39 credits of courses; it comprises:

Major Core Courses (24 credits)
There are eight major core courses that equip students with a solid base in the MBA program. These courses are:

ACO	620	Accounting for Managerial Decision Making	3 cr.
ECN	620	Economics for Business Decision-Making	3 cr.
FIN	620	Corporate Finance and Investment Decisions	3 cr.
MGT	630	Operations and Supply Chain Management	3 cr.
MGT	640	Corporate Strategic Planning	3 cr.
MRK	620	Marketing Management	3 cr.
MGT	621	Leadership and Negotiations	3 cr.
MGT	623	Business analytics	3 cr.

Support Core Courses (3 credits)
The one support core course is designed to equip students with numeracy and applied research skills.
The course is:

BUS	669	Business Research Design and Methods	3 cr.

One Graduate Applied Project (3 credits)
MBA candidates will complete 12 taught courses (36 credits) in addition to a Graduate Applied Project that is equivalent to 3 credits. The students should check with the Graduate Division for the required steps to be followed.

BUS	680	Graduate Applied Project	3 cr.

Professional Enhancement Courses
- GENERAL MBA OPTION:
  9 credits should be selected from the professional enhancement courses.
- MBA WITH EMPHASIS OPTION:
  9 credits falling in one emphasis should be selected from the Professional Enhancement Courses.

The professional enhancement/elective courses are:

HRM	622	Strategic Human Resources	3 cr.
MGT	629	Entrepreneurship and Small Business Management	3 cr.
MRK	626	Digital Marketing	3 cr.
PRM	625	Project Management Fundamentals	3 cr.
PRM	635	Quality and Risk Management for Projects	3 cr.
PRM	645	Processes Integration and Project Management	3 cr.

Major Core Courses

ACO 620 Accounting for Managerial Decision Making (3.0); 3 cr. Business decisions are mostly based on accounting records and success is usually measured in financial terms. This course is directly concerned with those managerial aspects related to the use of accounting information to make sound and informed short-term and long-term calculated decisions. Topics include categorizing relevant costs, costing systems, and cost-volume-profit relationships. Special attention is also drawn to profit planning and budgetary control, pricing products and services, and measuring and managing customer relationships and life cycle costs. This course will also develop graduate students' ability to analyze the published statements of corporations. *Prerequisites:* ACO 501 or Equivalent.

ECN 620 Economics for Business Decision Making (3.0); 3 cr. Economics deals with real world issues; microeconomic analysis is the heart of economics and the key to its application in the world of business. From this perspective, this course introduces MBA students to the application of economic models and economic reasoning to making managerial decisions in both the private and public sectors. Topics include, but are not limited to, optimization techniques, market structures, and pricing models. Demand estimation and forecasting (e.g., exponential smoothing, time series decomposition, regression models), production and technology (e.g., production functions, three important measures of production, three stages of production, optimal combination of inputs, isoquant/ isocost, returns to scale, Cobb-Douglas production functions), cost analysis for business decisions: explicit and implicit costs, opportunity cost, relevant costs for business decisions, costs result from production, short-run production and costs, short-run costs per unit of output, costs in the long-run, economies/diseconomies of scale, break- even analysis market structure and pricing, and perfect/imperfect competition models. The economies of investment and finance: risk/ uncertainty, probability concepts and the expected value, measurement of risk, risk aversion and risk preference, risk and capital budgeting, risk-adjusted discount rate and certainty equivalent factors, decision trees, game theory, and decisions under uncertainty; further analysis of pricing decisions.

FIN 620 Corporate Finance and Investment Decisions (3.0); 3 cr. This course takes a practical look at the cores of corporate financial management and investment decisions. It treats the principal topics and issues that are of concern to financial managers of modern organizations. These include, but are not limited to, capital budgeting, capital structure, financing instruments, and derivatives. *Prerequisites:* FIN 501 or Equivalent.

MGT 621 Leadership and Negotiations (3.0); 3 cr. The objective of this course is to present students with the principles of leadership and the practice of negotiation. This course is a practical approach to leadership influences on decision-making and negotiation by exploring power, bargaining, mediation, personality, and conflict resolution. Students will learn to utilize negotiation techniques in a professional, effective, and ethical approach.

MGT 623 Business Analytics (3.0); 3 cr. This course prepares students to address complex problems faced by managers and decision-makers. It introduces business analytics which involve the manipulation of data, models, methods, and fact-based cases. The main objective of this course is to provide students with the needed tools to lead in analytics-driven organizations. Topics include data manipulation, predictive analytics, decisions under uncertainty, and decision analytics tools used to improve and support the decision making process.

MGT 630 Operations and Supply Chain Management (3.0); 3 cr. Operations management is critical to ensure a smooth running of the supply chain and to deliver value to customers and the business as a whole within its overall strategy. This course examines the different frameworks for designing, diagnosing, and improving operations, thereby contributing to creating and sustaining a competitive edge in the workplace. Topics include, but are not limited to, operations design, capacity planning and control, scheduling, supply chain logistics, and quality control and continuous improvement.

MGT 640 Corporate Strategic Planning (3.0); 3 cr. This is a capstone course integrating the various concepts and skills taught in the other business courses. It focuses on strategic planning, business policy formulation, and implementation. Strategic Planning is viewed as the process by which an organization maintains its competitiveness within its work environment by determining its present business position, where it wants to go, and how it wishes to get there. This is done by identifying business resources and competitive capabilities and directs these resources towards gaining sustainable and competitive advantages. The course also treats modern strategic perspectives such as global strategic planning, corporate governance and sustainable strategies, strategic games, and business thinking. *Prerequisites:* 12 credits.

MRK 620 Marketing Management (3.0); 3 cr. This course aims to develop the MBA candidates' critical understanding of the marketing function and its contribution to the success of an organization. It discusses and applies ideas in the areas of marketing planning, market research, consumer behavior, and strategic marketing. Topics include, but are not limited to, environment scanning and marketing planning, consumer and business purchasing processes, target markets and promotion, competitive intelligence, and managerial decision-making.

Support Core Courses

BUS 669 Business Research Design and Methods (3.0); 3 cr. This course views research as a strategic activity that is conducted within a framework of ethical, legal, and social constraints. The focus is on research strategies and methods and their application to the development of a formal research design leading to successful implementation of research projects. Students will be introduced to qualitative and quantitative methods in order to conduct comprehensive research. *Prerequisites:* 12 credits.

Graduate Research Report

BUS 680 Graduate Applied Project (3.0); 3 cr. The aim of the graduate applied project is to give students the opportunity to apply the theory and methods to real-world problems and settings through a research project, field project, or a case study that effectively demonstrates student accomplishment. Students produce a structured report based on a proposal. *Prerequisite:* BUS 669.

Professional Enhancement/Elective Courses

HRM 622 Strategic Human Resources (3.0); 3 cr. Strategic Human Resource Management introduces the strategic perspective to consider when creating value and delivering results. In this course, students will develop an understanding of principles, current issues, and practices pertinent to Human Resource Management (HRM) strategies. Students will critically comprehend how contemporary HRM decisions can lead to organizational effectiveness. This course will explore subjects related to planning, recruitment, career development, reward management, risk management, and diversity management.

MGT 629 Entrepreneurship and Small Business Management (3.0); 3 cr. This course examines the peculiar attitude, skills, and behavior needed for successful launching of new ventures and managing of small businesses, the backbone of modern economies. Aimed for those with a desire to become entrepreneurs, work in start-ups, or develop careers in consultancy, venture capitals, and investment banking, the course studies the best practices that foster innovation and new business development in independent or corporate settings. Referring extensively to business case examples and the experience of creative guest speakers, students will conduct analyses of new venture ideas and comprehensive transformation business plans.

MGT 630 Operations and Supply Chain Management (3.0); 3 cr. Operations management is critical to ensure a smooth running of the supply chain and to deliver value to customers and the business as a whole within its overall strategy. This course examines the different frameworks for designing, diagnosing, and improving operations, thereby contributing to creating and sustaining a competitive edge in the workplace. Topics include, but are not limited to, operations design, capacity planning and control, scheduling, supply chain logistics, and quality control and continuous improvement.

MRK 620 Marketing Management (3.0); 3 cr. This course aims to develop the MBA candidates' critical understanding of the marketing function and its contribution to the success of an organization. It discusses and applies ideas in the areas of marketing planning, market research, consumer behavior and strategic marketing. Topics include, but are not limited to, environment scanning and marketing planning, consumer and business purchasing processes, target markets and promotion, competitive intelligence, and managerial decision-making.

MRK 626 Digital Marketing (3.0); 3 cr. Students will understand the digital marketing channel mix by developing a comprehensive digital marketing optimization strategy using analytics tools. Having an online presence becomes a necessity today. Students will be confronted with the latest advances in order to be able to grasp new opportunities and build an integrated online marketing strategy aligned with the overall marketing strategy of the company.

PRM 625 Project Management Fundamentals (3.0); 3 cr. This course will provide the students with a deep understanding of the fundamentals of project management. It mainly covers the process and framework of project management. The topics will include scope management, time management, and cost management, as well as the scheduling and concept of earned value. This course will also tackle the role of the project manager in initiating, planning, executing, monitoring, and closing projects.

PRM 635 Quality and Risk Management for Projects (3.0); 3 cr. More than half of global business projects fail. This failure can be due to different reasons and it is key for organizations to understand the most common causes in order to improve chances of success. This course is designed around project failures, contingency plans, and projects recovery, as well as the human resources management in the midst of it. PRM 635 applies quality control techniques and risk management concepts to projects to improve their success rate. Topics include quality planning, quality assurance, quality control, continuous improvement, risk identification, qualitative analysis, quantitative analysis, response planning, monitoring and control, and proactive planning.

PRM 645 Processes Integration and Project Management (3.0); 3 cr. This capstone course integrates the five processes that define project management. It covers the phases of initiation, planning, execution, monitoring, and closeout, linking them to the nine areas of knowledge in project management, namely the integration, scope, time, cost, quality, human resources, communication, risk, and procurement. Moreover, this course focuses on project communication, procurement, and stakeholder management to provide the student with an in-depth understanding of the project structure and the management of its external environment.

PRM

BUSINESS STRATEGY

THE DEGREE OF MASTER OF SCIENCE IN BUSINESS STRATEGY (MS-BS)

The Master of Science in Business Strategy is a specialized degree. It aims to provide students with a specialization in the field of Business Strategy. This program is designed to attract:

- Business professionals preparing themselves for advancement in their careers;
- Fresh graduates of business and other faculties preparing themselves to jump-start a career in management;
- Professionals and fresh graduates aspiring to pursue doctoral studies in business strategy, or any other subject linked to the discipline; and
- Professionals and graduates of other faculties contemplating a move into the world of business and management.

Mission

The MS in Business Strategy at NDU aims at providing aspiring candidates with a set of professional and technical skills allowing them to incorporate a strategic perspective in their business processes and solidly advance in their chosen pathway be it further studies or employment.

Program Learning Outcomes and Goals

General Attributes

LG1: Our graduates will be effective communicators.

Objective 1.1 Students should be able to prepare clear and concise written reports using the appropriate style and structure.

Objective 1.2 Students should be able to deliver effective oral presentations that are well-focused and rigorous.

LG2: Our graduates will be critical thinkers.

Objective 2.1 Students should be able to critically analyze, synthesize, and evaluate alternatives when making decisions.

LG3: Our graduates will have a sound recognition of ethical dimensions in business practice.

Objective 3.1 Students should be able to assess the ethical dimensions in various business situations.

LG4: Our graduates will have strategic thinking abilities.

Objective 4.1 Students should analyze complex business problems and recommend optimal strategies.

LG5: Our graduates will be strategic integrators.

Objective 5.1 Students should apply functional areas in the strategic planning process.

LG 6: Our graduates will have research skills.

Objective 6.1 Students should be able to conduct sound research.

Admission Procedures and Requirements
The requirements for entry are:

- BUSINESS AND ECONOMICS GRADUATES
  - An application form duly completed;
  - Two recommendation letters, one of which is from a university professor; and
  - A minimum GPA of 2.7/4.0 or its equivalent at the undergraduate level.

- OTHER DISCIPLINE GRADUATES

Applicants holding non-bachelor degrees in Business Administration or Economics may be required to take up to 18 credits of remedial courses. A minimum cumulative GPA of "2.7" should be achieved in these courses. The grades of these courses are not included in the overall GPA.

Applicants from institutions where English is not the language of instruction, a minimum score of 60 in the English Entrance Test (EET) is required.

Graduation Requirements
Students seeking an MS in Business Strategy must successfully complete a total of 30 credits on either a full- or part-time basis, maintaining a minimum overall average of 3.0/4.0. It is important to note that the minimum passing grade for graduate courses is a C, with a maximum of two Cs permitted throughout the program.

Credit Transfer
Up to 6 relevant Master's level credits can be transferred from other relevant Master's programs. Relevant programs include (list not exhaustive):

- MS, MA, MPhil, or MRes programs in Business/Management;
- MS, MA, MPhil, or MRes programs in Economics or Financial Economics;
- MBA (with or without concentration).

The below items are applicable to all programs:

Time schedule
All the graduate courses are offered starting 5:30 p.m.

Registration Procedure
For registration procedure to the graduate program, see the corresponding pages in this Catalog.

Course Load
The maximum course load is 12 credits per semester.

Academic Advisor
Each graduate student shall be assigned an academic advisor to assist him or her in the preparation of the plan of study and in selecting a supervisor for the thesis or research project. It is, however, the student's ultimate responsibility to ensure that all graduation requirements are met.

Academic Rules and Regulations
For complete and detailed information regarding University academic rules and regulations of the graduate degree programs, students should refer to the corresponding pages in this Catalog.

It is the responsibility of the graduate student to read and observe the academic rules and regulations set by the University and the Faculty. Ignorance of a rule or a regulation is not a justification for not applying them.

Repeating Graduate Courses
A graduate course may be repeated only once. In the calculation of the student's cumulative GPA, only the last grade is considered.

Dismissal from the Graduate Program
A graduate student will be dismissed from the program for one of the following reasons:

- Failure to remove probation within two consecutive semesters after being placed on probation; and
- Failing the research project or the thesis defense twice.

The Structure
The program consists of a total of 30 credits; it comprises:

Major Core Courses
Five major core courses equip the student with a solid base; these courses are:

HRM	622	Strategic Human Resources	3 cr.
MBS	611	Corporate Strategy	3 cr.
MBS	630	Strategic Financial Analysis	3 cr.
MGT	630	Operations and Supply Chain Management	3 cr.
MRK	620	Marketing Management	3 cr.

Major Elective Courses
The choice of the major elective courses will depend on student interest; one or two course(s) from the following pool must be chosen:

MGT	621	Leadership and Negotiations	3 cr.
MGT	629	Entrepreneurship and Small Business Management	3 cr.
MRK	626	Digital Marketing	3 cr.
PRM	625	Project Management Fundamentals	3 cr.
PRM	635	Quality and Risk Management for Projects	3 cr.
PRM	645	Process Integration and Project Management	3 cr.

Capstone Course
The capstone course utilizes the collective knowledge in the different functional areas in business to equip the student with the necessary skills he or she requires in crafting and implementing the strategic plan.

MBS	660	Business Policy	3 cr.

Research Component

The final phase of the MS program consists of writing a structured Master's research thesis or applied project based on an approved research proposal preceded by a course that introduces students to quantitative and qualitative research methods.

BUS	669	Business Research Design and Methods	3 cr.
BUS	690	MS Thesis	3 cr.
or			
BUS	680	Graduate Applied Project	3 cr.

Major Core Courses

MBS 611 Corporate Strategy (3.0); 3 cr. This is an introductory course on corporate strategy. The course focuses on the strategic management process which encompasses mission statement formulation, internal and external environment scanning, identification of strategic alternatives and strategic choice as well as corporate social responsibility. Students are also exposed to different business models for corporate sustainability.

MBS 630 Strategic Financial Analysis (3.0); 3 cr. This course provides the students with a systematic framework for using financial statements in business analyses, equipping students with the finance skills to make strategic finance and business decisions. Students will learn to interpret financial information and value opportunities in order to make good decisions regarding ongoing business performance, choosing between project investment alternatives, resource allocation, company valuations and company capital structures.

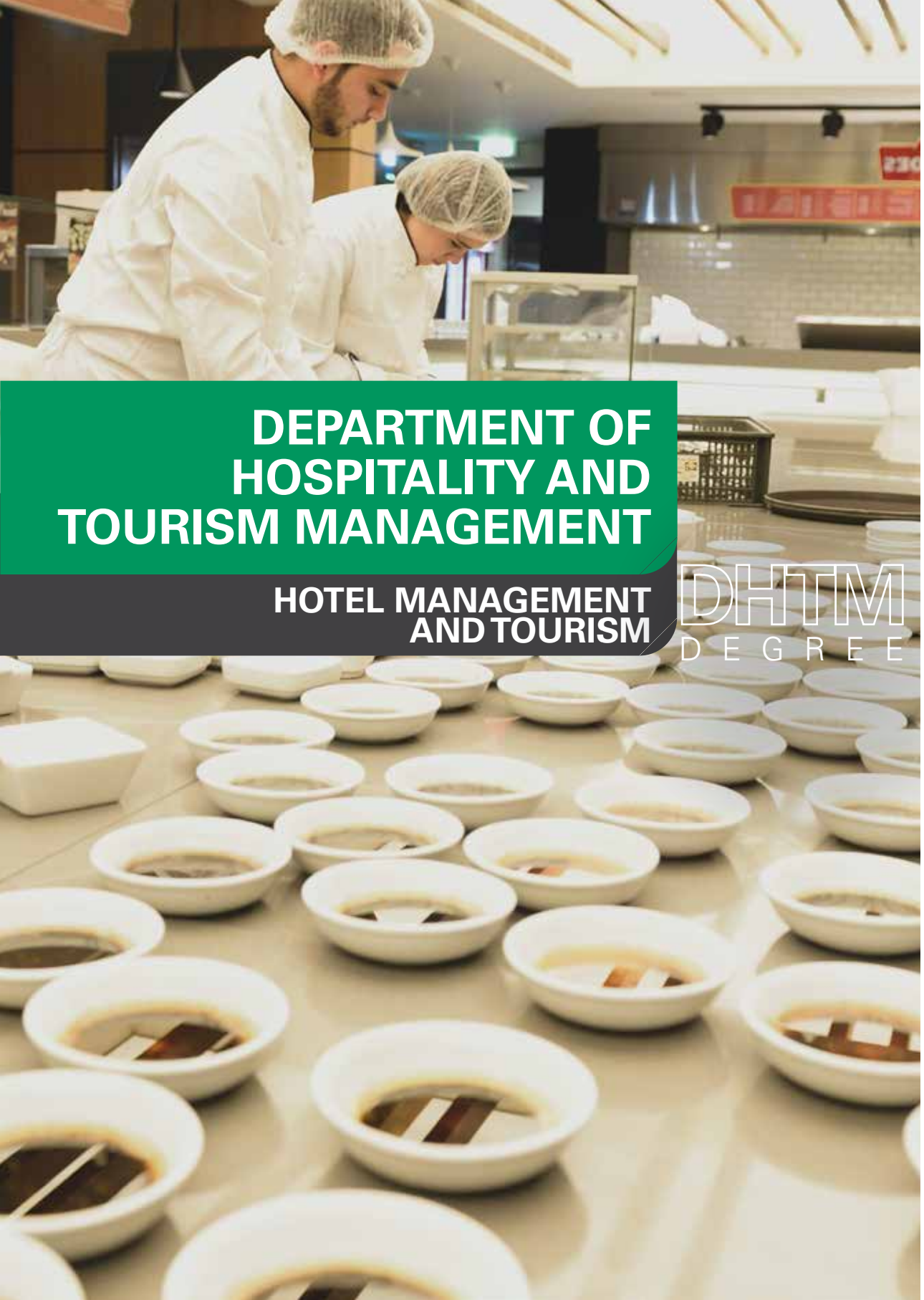
Major Elective Courses

Capstone Course

MBS 660 Business Policy (3.0); 3 cr. This is a capstone course integrating the various concepts and skills taught in the other business courses. It focuses on strategic planning and business policy formulation and implementation. Students will get a deep understanding of the process by which an organization maintains its competitiveness within its work environment by determining its present business position, where it wants to go, and how it can get there. Different tools used by top consulting firms around the globe are applied in this course to build winning strategies. *Prerequisite*: MBS611.

Research Component

BUS 690 Thesis (6.0); 6 cr. A MS Thesis is a significant contribution to knowledge which shows a critical appreciation of existing knowledge in the field. The work must be communicated coherently in a thesis presented in a critical, literary and orderly way, and must show evidence of adequate analysis and discussion of results. This is an individual work. Faculty members with expertise in the research field can act as supervisors. Students produce a structured report based on a research proposal that was submitted earlier to the Graduate Division within four weeks from the time of registration. *Prerequisite:* BUS 669.



DEPARTMENT OF HOSPITALITY AND TOURISM MANAGEMENT

HOTEL MANAGEMENT AND TOURISM

DHTM
DEGREE

BACHELOR DEGREE

DEPARTMENT OF HOSPITALITY AND TOURISM MANAGEMENT

Associate Professor: Zgheib, Yussef

Senior Lecturers: Beyrouthy, Ghassan; Sakr, Omar.

THE DEGREE OF BACHELOR OF HOTEL MANAGEMENT AND TOURISM (BHMT)

Mission
Consistent with the Faculty of Business Administration and Economics (FBAE) mission, the Bachelor Program in Hotel Management and Tourism (BHMT), at Notre Dame University-Louaize (NDU) contributes to the development of the Lebanese tourism industry and provides local, regional, and international markets with high caliber professionals from different areas of expertise.

Program Learning Outcomes and Goals
General Attributes

LG1. Business Knowledge: Our Graduates will have comprehensive disciplinary knowledge in the operation and management of hospitality-related enterprises.
Objective 1.1 Students should be able to demonstrate the understanding of core hospitality management knowledge and techniques.

LG2. Critical thinking: Our graduates will be critical thinkers.
Objective 2.1 Students should be able to critically analyze information to solve business problems using appropriate quantitative and qualitative techniques.

LG3. Communication: Our graduates will be effective communicators.
Objective 3.1 Students should be able to prepare clear and concise written reports using the appropriate style and structure.
Objective 3.2 Students should be able to deliver effective oral presentations that are well-focused and rigorous.

LG 4. Ethical and social responsibility: Our graduates will have a sound recognition of the ethical and social impacts of business practice.
Objective 4.1 Students should be able to examine and identify ethical issues related to hospitality management organizations.
Objective 4.2 Student should be able to assess social implications in various business situations.

LG 5. Teamwork: Our graduates will be good team participants.
Objective 5.1 Students should be able to collaboratively and positively participate in teams.

Major Requirements
All candidates for the Bachelor of Hotel Management and Tourism degree have to complete sixteen 3-credit courses, as specified by the Department, 1 course of Lab application, and 1 Internship to be preferably taken during the summer period. These courses provide the core Business, and Hospitality and Tourism operational skills needed prior to choosing a field of concentration.

Concentration Requirements
Consists of seven 3-credit courses and 1 Internship depending on the chosen concentration and the candidate's preferred sub-specialization. These courses are to equip students with advance knowledge in their future professional field.

Admission Procedures and Requirements
The BHMT attracts fresh high school graduates from all strands alongside with Technical Baccalaureate students in the fields of hospitality and/or tourism. An applicant is accepted if he or she fulfils all the NDU admission requirements. In addition, there are three states of selection to the BHMT: acceptance, conditional acceptance (with remedials), and rejection.
For admission procedures and requirements to the undergraduate degree programs offered by the FBAE, refer to the Office of Admissions, "Undergraduate Admission" section of this Catalog.

Academic Rules and Regulations
For complete and detailed information regarding "Academic Rules and Regulations" for the undergraduate degree programs, Department of Hospitality and Tourism Management (DHTM) students are strongly advised to refer to the appropriate sections in the Office of the Registrar section in this Catalog.

Disclaimer
Concentration area appears on student's transcript of record but not on student's diploma.

Rationale
The hospitality, travel, and tourism industry ranks among the top three largest industries in the world. The Bachelor of Hotel Management and Tourism program at NDU is designed to prepare students for successful professional and executive careers in the hospitality and tourism industries by allowing them to specialize in one of the following three concentrations: Hospitality Management, Food and Beverage Management, and Events Management.

The various concentrations provide a sound foundation in hotel, food and beverage, and events management through focused academic coursework, hands-on work experience and intense interaction with the industry. They also provide relevant educational opportunities for persons currently employed in these industries wishing to upgrade their skills.

Hospitality and Tourism Management students at NDU benefit from a rare opportunity to acquire the international management techniques and seek knowledge adapted to their professional career orientations and specializations.
The academic program follows a dynamic process allowing it to adapt to the evolving and changing trends in the market. Students are required to perform practical internships locally and internationally to accumulate experience that will enable them to jump-start their careers.

Bachelor of Hotel Management and Tourism
The Department of Hospitality and Tourism Management offers three programs leading to the Bachelor of Hotel Management and Tourism.

Graduation Requirements
Students seeking a Bachelor of Hotel Management and Tourism must complete a total of 103 credits with an overall average of at least 2.0/4.0 and a minimum average of 2.3/4.0 in the major and concentration requirements. The 103 credits are divided into:

Degree Requirements (103 credits)

Liberal Arts Curriculum **27 cr.**

Major Requirements **51 cr.**
HTM 201, AC0 201, HRM 201, MRK 201, ECN 212, HTM 211, HTM 224, HTM 227, HTM 381, BAF 311, FBM 312, FBM 316, HTM 319, FBM 324, HTM 326, HTM 450, HTM 451, HTM 459.

Concentration Requirements **22 cr.**
- Hospitality Management Concentration
- Food and Beverage Management Concentration
- Events Management Concentration

Major Electives **3 cr.**
Halfway through their University education, students majoring in Hotel Management and Tourism are provided with the opportunity to choose one of three concentration schemes. These options allow graduates to enhance their expert knowledge in one of the three most prevalent fields of hospitality and tourism, thus differentiating themselves from their peers and improving their potential for professional success.

HOSPITALITY MANAGEMENT CONCENTRATION

Major Requirements **22 cr.**
HTM 320, FBM 342, HTM 345, HVM 422, HTM 432, HTM 435, HTM 437, HTM 481.

Major Elective
A choice of one course from the following **3 cr.**
HTM 340, HTM 342, NTR 313, STA 202, BAF 312, ENT 301
or one course from any of the other concentrations.

FOOD AND BEVERAGE MANAGEMENT CONCENTRATION

Major Requirements **22 cr.**
FBM 333, FBM 342, FBM 344, HTM 345, FBM 415, FBM 425, HTM 435, HTM 481.

Major Elective
A choice of one course from the following **3 cr.**
HTM 340, HTM 342, NTR 313, STA 202, BAF 312, ENT 301
or one course from any of the other concentrations.

HOSPITALITY EVENTS MANAGEMENT CONCENTRATION

Major Requirements **22 cr.**
HVM 201, HVM 311, HTM 320, FBM 333, HVM 422, HTM 432, HVM 433, HTM 481.

Major Electives **3 cr.**
A choice of one course from the following
HTM 340, HTM 342, NTR 313, STA 202, BAF 312, ENT 301
Or one course from any other concentrations.

Minor in Hospitality Management (18 credits)

This minor introduces the student to the hospitality branch of the tourism industry, i.e. the world of hotels, clubs, casinos, service institutions, and all other accommodation facilities.

Students are required to use the following table:

Course #	Description	Credits
HTM 201	Fundamentals of Hospitality and Cultural Tourism	3
HTM 224	Rooms Division Management	3
HTM 227	Housekeeping Operations & Management	2
HTM 319	Hospitality Information Technology & Digital Transformation	3
HTM 381	Internship I: Rooms Division Operations	1
	CHOOSE TWO OF THE FOLLOWING	
HTM 211	Hospitality & Tourism Law	3
HTM 432	Hospitality Property & Asset Management	3
HTM 437	Hospitality Sales & Promotional Techniques	3
HVM 422	MICE Management	3
HTM 451	Managing Hospitality Organizations	3
HTM 459	Hospitality & Tourism Strategic Management	3
Total		**18 cr.**

Minor in Food and Beverage Management (19 credits)

This minor is recommended to students who intend to be involved in the food & beverage, restaurant, or catering business. The scope of this minor is to provide students with a broad and professional understanding of the world of restaurants, pubs, catering companies, and the like.

Students are required to use the following table:

Course #	Description	Credits
FBM 312	Food Production and Yielding	3
FBM 316	Food Production Lab	3
FBM 324	Restaurant Operations & Floor Management	3
HTM 450	Cost Control for the Hospitality Industry	3
HTM 481	Internship II: F&B or Events Operations	1
	CHOOSE TWO OF THE FOLLOWING	
FBM 333	Catering & Banqueting Management	3
FBM 342	Procurement for Hospitality Operations	3
FBM 415	Advanced Food Production	3
FBM 425	F&B Corporate Development and Franchising Operations	3
FBM 344	Wine and Spirits Appreciation	3
HVM 422	MICE Management	3
Total		**19 cr.**

Minor in Events Management (16 credits)

The minor in events management offers a solid introduction and understanding of the events management industry. It allows students enrolled in other undergraduate programs at NDU to broaden their educational experiences by developing the knowledge and skills to plan and execute a wide range of social, cultural, educational, business, entertainment, and fundraising events within a local, regional, and international context.

Students are required to complete the following table:

Course #	Description	Credits
HVM 201	Introduction to Events Management	3
HVM 311	Events Sponsorship and Fundraising	3
HVM 422	MICE Management	3
HTM 481	Internship II: F&B or Events Operations	1
	CHOOSE TWO OF THE FOLLOWING	
HTM 320	Protocol and Etiquette in Hospitality Management	3
FBM 333	Catering and Banqueting Management	3
HTM 340	Tour Guiding & Management	3
HTM 345	Sustainable Hospitality Management	3
HTM 432	Hospitality Property & Asset Management	3
HVM 433	Events Project Management & Logistics	3
ENT 301	Managing a Small Business	3
Total		**16 cr.**

Undergraduate Courses: Hotel Management and Tourism

HTM 201 Fundamentals of Hospitality and Cultural Tourism (3.0); 3 cr. This course provides an in-depth overview of the world's largest and fastest growing business. It introduces the students to Tourism, Hospitality, and Event (THE) operations with a focus on career opportunities and organizational structures. It also focuses on the human relationship skills needed for success in THE operations. The course also introduces the students to basic management concepts and industry terminology, with the service culture as an essential component. Real-life Tourism, Hospitality, and Event business examples and highly interactive classes provide the students with the opportunities to develop problem solving and decision-making skills. *Prerequisite:* None.

HVM 201 Introduction to Events Management (3.0); 3 cr. This course introduces students to the event industry, providing them with general knowledge about event management competency, event types and standards, practices, processes, the risk assessment of an event, in addition to other issues directly related to operations, team management, and green practices. This course explains the key tools that an event planner should apply to deliver a successful event from planning to execution. *Prerequisite:* HTM 201.

HTM 211 Hospitality & Tourism Law (3.0); 3 cr. This course aims at introducing basic law concepts to the students, with a focus on the laws and regulations affecting the hospitality industry in particular. It is intended to provide the industry professionals with the necessary legal background to allow them to deal with most of the situations that they may be faced with during their practice. *Prerequisite:* HTM 201.

HTM 224 Rooms Division Management (3.0); 3 cr. This course provides an overview of the management practices, policies, procedures, and flow of activities that are necessary to manage the rooms division department of a hotel. Students will acquire the necessary practical knowledge and skills to properly handle property management, security, and housekeeping operations in general and front-office operations in depth. The four stages of the guest cycle from pre-arrival to departure will be explored along with the interaction with supporting departments and operations. *Prerequisite:* HTM 201.

HTM 227 Housekeeping Operations & Management (2.0); 2 cr. This course is an introduction to the management of housekeeping operations, which is the act of overseeing the organizational, financial, and day-to-day housekeeping operations of a hotel. Management of housekeeping includes supervision of staff, scheduling, the physical maintenance, the cleaning process and products, characteristics of materials and supplies, linen and laundry, selection and maintenance of fabrics, furniture and floor coverings, safety within the work environment, and housekeeping technology. *Prerequisite:* HTM 201; *Corequisite:* HTM 224.

HVM 311 Events Sponsorship and Fundraising (3.0); 3 cr. Event sponsorship and fundraising provide step-by-step guidelines for attracting, signing, and keeping sponsorships for any event, including festivals, conventions, expositions, sporting events, arts and entertainment spectaculars, charity benefits, and much more. This hands-on resource presents successful strategies and tools for staying competitive in today's market by offering corporate sponsors the highest return possible on their investment and supporting communities and human causes. At the end of this course, students will be able to provide real world advice for researching and targeting prospective companies, developing a fundraising marketing plan, creating an effective proposal, selling a sponsorship, and negotiating sponsorship deals to ensure the viability and success of any event. *Prerequisite:* HVM 201.

FBM 312 Food Production and Yielding (3.0); 3 cr. The course provides the acquisition of leadership knowledge, practices, and attitudes appropriate for effective food production practices and management for restaurants, catering, and events operations. This is a comprehensive hands-on introduction to basic food production techniques such as classic knife cuts, culinary terminologies, cooking techniques, quality detection of ingredients, kitchen equipment functions and usage, sanitation, safety, nutrition, and professionalism among others. *Prerequisite:* None.

FBM 316 Food Production Lab (0.3); 3 cr. This course will cover the basic principles and techniques of food preparation, care of equipment, and tools in the kitchen. The main objective of the course is to provide technical and culinary skills/processes needed in the production of a wide variety of food items such as amuse bouche, cold and hot appetizers, main courses, and desserts. Students will learn how to prepare and present several dishes with emphasis on the cooking techniques, temperature control, and international hygiene standards. *Corequisite:* FBM 312.

HTM 319 Hospitality IT & Digital Transformation (3.0); 3 cr. This course provides a managerial overview of information technology and digital transformation in the hospitality industry. Special emphasis is placed on utilizing information technology systems such as point-of-sale, inventory tracking, and reservation networks including distribution channels and e-channels in the effort to make operational and managerial decisions for the organization. Students will gain a good operational knowledge of the major software adopted in the hotel, events, and food and beverage industries. *Corequisite:* HTM 224.

HTM 320 Protocol and Etiquette in Hospitality Management (3.0); 3 cr. This course enhances students' knowledge and appreciation of good social manners and savoir vivre in delivering services and conducting hospitality interactions. Areas emphasized include: the impact of good etiquette, looks and communication, meetings and social events, diversity and conflicts, and globalization and traveling. The outcome of the course is a student who carefully and professionally deals with both known as well as difficult or unfamiliar situations to avoid any social "faux pas" that could ruin a perfectly good hospitality service. *Prerequisite:* Junior standing.

FBM 324 Restaurant Operations & Floor Management (3.0); 3 cr. This course presents an extensive theoretical and practical exposure to restaurant operations from concept to floor management. This course provides students the unique opportunity to study operations and management of full-service restaurants. Course topics include business planning, operational issues, customer satisfaction, restaurant trends and challenges, financial accountability, service issues, technologies, and daily restaurant management/operations. Various aspects of production and service are experienced, discussed, and demonstrated. Students become familiar with all aspects of restaurant operations and floor management. *Prerequisite:* FBM 312.

HTM 326 Lebanon's Cultural, Heritage and Nature Tourism (3.0); 3 cr. This course enables the students to understand the elements and characteristics of domestic tourism and the role each major stakeholder plays within the tourism value chain. The strong experiential dimension of this course through the various group and class field trips across Lebanon expose the students to the reality and challenges of domestic travel & tourism and allows them to experiment with different types of tourism such as nature tourism, cultural tourism, volunteerism, agri-tourism, dark tourism, eco-tourism, religious tourism, rural tourism, sports and adventure tourism, culinary tourism, and VFR tourism. In addition, this course will introduce the students to the basics of managing a rural destination. *Prerequisite:* Junior standing.

FBM 333 Catering and Banqueting Management (3.0); 3 cr. The course leads to a thorough understanding of the different catering concepts for special functions and

banquets. Lectures and demonstrations focus on planning and creating catering menus, working methods, catering equipment/ furniture, kitchen and service layout, banquets service sequence, function preparations and execution, banquet sales, and human resources organization and management for catering operations. The course will equip students to operate and manage different types of catering and banqueting services, on and off premises. *Prerequisite:* FBM 312.

HTM 340 Tour Guiding & Management (3.0); 3 cr. Tour Guiding & Management has been designed to provide the students with the basic tools to enter the tourism industry with a solid theoretical and practical foundation for continuing professional development in tourist guiding. Project work and research will represent essential parts of the course. Students will be required to undertake, in their own time, a full regional familiarization of a specific destination to prepare a two-day tour with its related activities. *Prerequisite:* Junior standing.

HTM 342 Travel Agency and Tour Operations (3.0); 3 cr. This course provides a thorough examination of the services and functions of retail and wholesale travel agencies, automation and operations, as well as wholesale package planning, implementation and evaluation. Field trips and actual projects will supplement classroom discussions. *Prerequisite:* Junior standing.

FBM 342 Procurement for Hospitality Operations (3.0); 3 cr. Procurement, in its broadest sense, includes a full range of management tasks, from listing supply needs to controlling inventory. Each hospitality operation must tailor a procurement program to meet its individual needs. This course is intended to enhance an understanding of the managerial aspects of the hospitality purchasing activity. Emphasis is placed on strategic selection and procurement considerations based on supplier information, item need, and value. The purchasing targets are food, beverage, equipment, supplies, services, and hotel and restaurants furnishings. Attention will also be given to inventory management principles of receiving and storing as well as the ethical and technological considerations. *Prerequisite:* FBM 312.

FBM 344 Wine and Spirits Appreciation (3.0); 3 cr. This course is an introduction to the origins of Wines and Spirits, from grapes to other fruits and grains as raw material from specific regions in the world, to their transformation by different cultures and civilizations. It focuses on the processes of fermentation, maceration, blending, distillation and aging, tasting and serving. Special attention is given to the understanding of human senses in the evaluation process objectively and subjectively. The course alternates between lectures and tasting sessions with sampling of different beverages to assess quality versus major defections due to storage, handling and other parameters. *Prerequisite:* Junior Standing.

HTM 345 Sustainable Hospitality Management (3.0); 3 cr. This course has been designed to provide the students with a solid theoretical and practical understanding of sustainable hospitality management. It enables them to critically examine the key concepts of sustainable hospitality and develop a sustainable management program for accommodation and food service operations. The major topics covered are the principles of sustainable hospitality based on its three pillars (environmental, economic, and socio-cultural), environmental management systems (EMS) applied to waste, water, and energy, building management systems (BMS), eco-design in hospitality architecture, responsible consumerism, local sourcing, responsible procurement, responsible recruitment, communicating, and reporting responsible hospitality practices according to the Global Reporting Initiative (GRI), international certifications, and standards of sustainability for Tourism, Hospitality, and Event (THE) operations. *Prerequisite:* Junior standing.

HTM 381 Internship 1: Rooms Division Operations (1.0); 1 cr. This course provides students with the opportunity to bridge their academic acquisitions with work experience through a 550-hour on-the-job real life training. Interns will have the opportunity to acquire hands-on skills in the areas of front office, housekeeping, reservations, and night auditing, under the direction and supervision of an experienced hotel practitioner. The course will further allow enhancement of interns' communication skills, self-confidence, and operational capabilities. *Prerequisites:* HTM 224 and HTM 227.

FBM 415 Advanced Food Production (2.1); 3 cr. This course prepares students to compose food menus, write standard recipe cards, schedule labor, manage food cost, execute and produce a variety of meals, and examine the latest techniques in the food production industry. After finishing this course, participants will be able to demonstrate proper culinary competencies and kitchen management systems, such as cost control, labor control, inventory control, production scheduling, sales history, menu development, and forecasting. *Prerequisite:* FBM 316.

HVM 422 MICE Management (3.0); 3 cr. MICE (meetings, incentives, conferences/ conventions, and events/exhibition) Management: this course presents a sense of the size and scope of the MICE industry. Upon completion, students will acquire specialized managerial skills required to package, plan, execute, and evaluate these product segments. The management of such corporate events incorporates the determination of the purpose, the message, the budget, the selection of a convention site, the prospection for attendees, the setting of dates and timeline, the management of exhibit spaces, the lodging services, the procurement of food and beverage, the telecommunications and audio-visual requirements, the transportation, the labor and equipment and the assessments of the MICE/convention's success, and all other related issues. *Prerequisite:* Senior standing.

FBM 425 F&B Corporate Development & Franchising Operations (3.0); 3 cr. In this course, students will be offered the opportunity to deepen and develop their managerial knowledge and leadership capabilities in the food and beverage business from the moment a brand is founded/ introduced, and then developed through the right exploitation of resources, in order to ensure its competitiveness and longevity. After that, students will learn how to manage multiple F&B brands under a holding in addition to strategically plan their growth/expansion through a franchising contract, management agreement, or partnership. Contemporary case studies will be analyzed, discussed, and finally tested through an applied project. *Prerequisite:* FBM 324.

HTM 432 Hospitality Property & Asset Management (3.0); 3 cr. This course provides comprehensive exposure to the intricate flow of operations of the engineering and maintenance department in hospitality organizations (e.g., hotels, F&B, and events). Students will acquire the necessary managerial skills and the basic technical understanding to properly run the major operating systems (e.g., electricity, HVAC, sound, water, waste, safety, security, energy, plumbing, carpentry, etc.) The course includes field visits and hands-on practical experience. *Prerequisite:* Senior standing.

HVM 433 Events Project Management & Logistics (3.0); 3 cr. The creative and business elements of events need to be designed, planned, coordinated, and finally executed. This course examines the creative process and applies organizational/operational principles to ensure a successful event from start to end. The course scrutinizes the process for executing an event from concept and pre-production to implementation and on-site logistics management and measurability. The course content builds on a planning and project management framework and considers elements of theming, budgeting, marketing, logistics, site planning, entertainment, management of subcontractors, and labor issues. *Prerequisite:* Senior standing.

HTM 435 Revenue Management & Hospitality Data Analytics (3.0); 3 cr. This course provides the necessary knowledge, skills, and competencies to develop optimal revenue management strategies in hospitality organizations. Students will learn how to consolidate a multitude of data from different

sources, analyze them, and design pricing policies that would improve the profitability of hospitality organizations. Analytics-based techniques will be used to help predict consumer behavior at the market level so that each organization can sell the right product to the right customer at the right time and for the right price. *Prerequisite:* Senior standing.

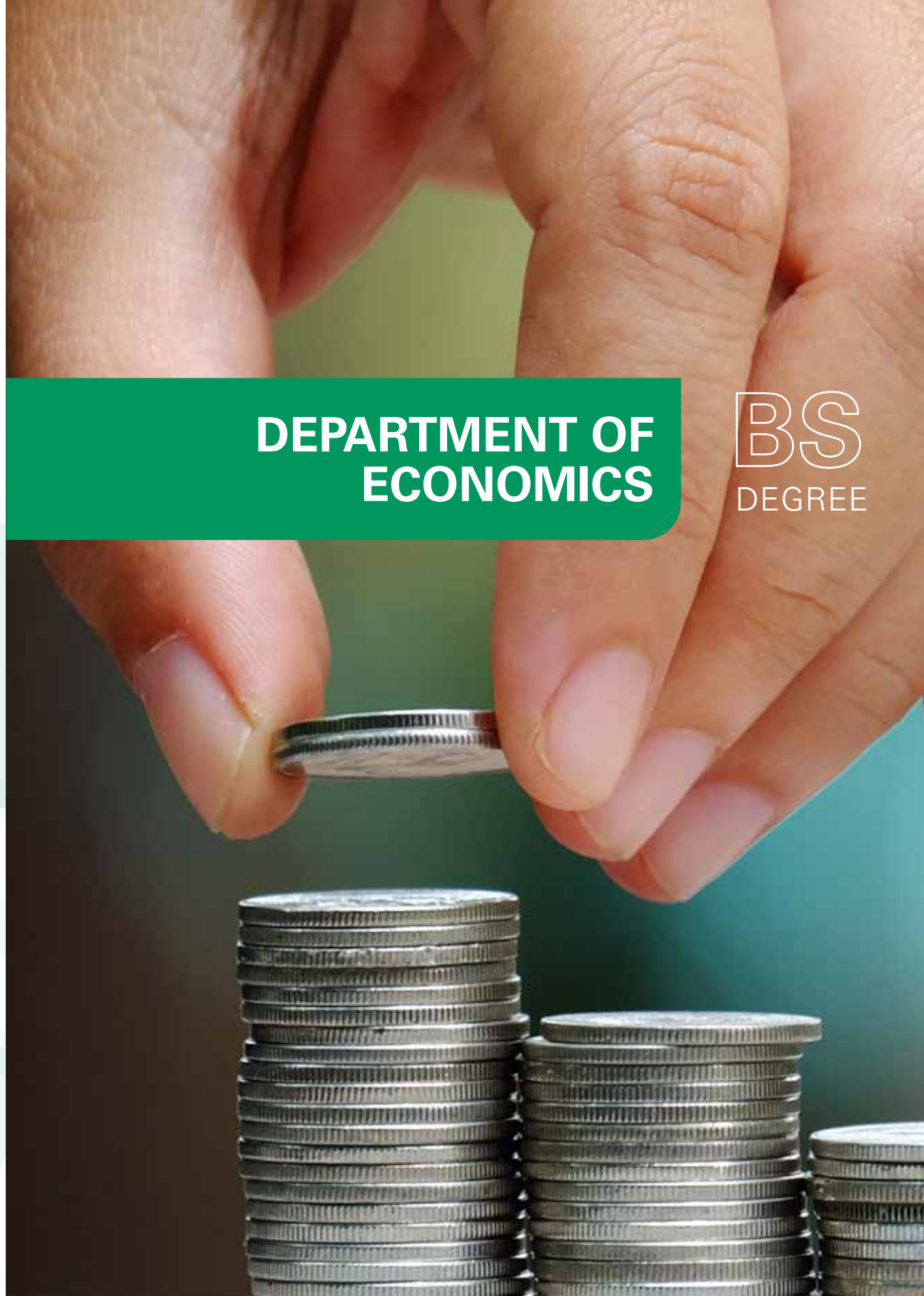
HTM 437 Hospitality Sales and Promotional Techniques (3.0); 3 cr. This course aims at converting advanced tourism, hospitality and events marketing planning into effective promotional and sales strategies and tactics. Focus is on understanding the specifics of the industry and the experiential expectations of guests and travelers, then building appropriate promotional communication and relationships, ending with the diverse customized sales techniques available. The underlying philosophy is being that every person engaged in the hospitality industry has an intrinsic responsibility for sales and promotion. An analysis of hospitality buyers' motivations and behaviour, and the related effective promotional and sales techniques. This partly experiential course provides the opportunity to develop and practice promotional and personal-selling skills. *Prerequisite:* Senior standing.

HTM 450 Cost Control for the Hospitality Industry (3.0); 3 cr. This capstone course is designed to familiarize the student with the theory and practice of cost control techniques used in the hospitality, F&B, and events industries. A comprehensive and thorough practical knowledge of cost ratios, yield analysis, purchasing cycles, menu management, and employee productivity standards are studied. The focus is to provide future hospitality managers with applied operational cost control techniques in order to optimally handle the challenges of profitability, quality, cost management, and employee productivity. *Prerequisite:* Senior standing.

HTM 451 Managing Hospitality Organizations (3.0); 3 cr. The course provides the acquisition of leadership knowledge, practices, and attitudes appropriate for effective management of tourism, hospitality, and events (THE) operations. The focus is on hospitality service quality management, organizing and coordinating hotel interdepartmental operations, competitive processes development, and resources management. *Prerequisite:* Senior standing.

HTM 459 Hospitality & Tourism Strategic Management (3.0); 3 cr. This capstone course in tourism, hospitality and events management (THE) aims to make students think holistically, about key issues facing the industry. It features the contextual integration and application of strategic reasoning into decision making. Focus is on adopting the standpoint of hospitality professionals in addressing strategic challenges and opportunities using a resource-based perspective to contextually exploit stakeholders' relationships in order to achieve nimble competitive strategic advantages. *Prerequisite:* Senior standing.

HTM 481 Internship 2: F&B or Events Operations (1.0); 1 cr. This course provides students with the opportunity to bridge their academic acquisitions with work experience through a 550-hour on-the-job, real life training. Interns will have the opportunity to acquire hands-on skills in the areas of food and beverage or events operations. For the F&B operations, the learning curve encompasses operations in food production, kitchen operations, food service, banqueting, bar tending, purchasing, cost control, inventory management, ordering, and receiving. For the Events operations, the learning curve includes planning, organizing, scheduling, staffing, securing logistics, supervising, closing, and evaluating events. The course will further allow enhancement of interns' communication skills, self-confidence, and operational capabilities. *Prerequisites:* - F&B concentration: FBM 316 & FBM 324; Events concentration: HVM 201.



DEPARTMENT OF ECONOMICS

BS DEGREE

DEPARTMENT OF ECONOMICS

Professor: Khoury, Bechara, (Fr.)

Associate Professor: Khoueiri, Roy

Assistant Professors: Badr, Georges; Bitar, Nicholas; Rizk, Ribal.

THE DEGREE OF BACHELOR OF SCIENCE IN ECONOMICS (BS)

In addition to the AACSB accreditation, the BS Economics has earned the International Association of Applied Economics (ASEPELT) Certification of Excellence.

General Description

The degree in Economics aims to help students analyze social phenomena from an economic perspective. It allows students to understand decision-making of individuals, firms, and the government facing limited resources. Due to the importance of quantitative skills, the Department requires students to study two econometrics courses, one math course, one statistics course, and one mathematical economics course. In addition, students may study purely qualitative courses, such as History of Economic Thought. This unique combination of courses helps students acquire a range of analytical, communication, and critical-thinking skills needed to apply economic theory to real world problems.

Mission

Consistent with the Faculty mission, the Bachelor of Science in Economics at NDU provides a combination of academic rigor and career preparation. It equips students with solid analytical and communication skills, and problem solving abilities, which are key to developing students' critical thinking. The Economics program emphasizes undergraduate study in a liberal arts education environment. It maintains the highest standards of education through a continuously revised curriculum. The program provides students with a challenging educational experience that enhances their innovation, competence, and sense of social responsibility, which will prepare students either for future graduate studies or for a variety of careers in the private and public sectors.

Program Learning Goals and Objectives

By the end of the program, graduates will be able to:

Goal 1: Economic Knowledge:

Our graduates will have a comprehensive knowledge in Economics.
Corresponding objective
Students should be able to:

1.1 Understand microeconomics and macroeconomic concepts and their applications.

Goal 2: Critical thinking:

Our graduates will be critical thinkers.
Corresponding objective
Students should be able to:

2.1 Synthesize conflicting information relevant to the understanding of a problem and draw an informed conclusion.

Goal 3: Quantitative skills:

Our graduates will employ quantitative analysis.
Corresponding objectives
Students should be able to:

3.1 Solve mathematically and graphically economic/econometric problems and interpret them.

3.2 Use appropriate statistical packages.

Goal 4: Communication:

Our graduates will be effective communicators.
Corresponding objectives
Students should be able to:

4.1 Prepare structured reports using the appropriate style.

4.2 Deliver effective and well-focused oral presentations.

Graduation Requirements

Students seeking a Bachelor of Science in Economics must complete a total of 90 credits. The degree requires an overall average of at least 2.0/4.0 and a minimum average of 2.3/4.0 in the common core and major requirements. These credits are divided into Liberal Arts Core Curriculum, Common Core Requirements, Major Requirements, Major Electives, and Free Electives. In addition, the passing grade for Principles of Microeconomics and Macroeconomics, and the remedial Math courses is "C." Students are strongly advised to plan their courses in advance for the entire program.

Admissions Requirements

All applicants must satisfy an acknowledged level of English proficiency to be admitted. For more information, refer to the corresponding pages in this Catalog. A student may be required to take Math 105 as a remedial course in mathematics if, upon evaluating his or her application, he or she did not accumulate the minimum composite score required by the FBAE.

The new contract sheet is described below.

Degree Requirements (90 credits)

Liberal Arts Curriculum	**27 cr.**
Core Requirements ACO201, BAF311, MGT 323, MGT 433, MAT204, STA210.	**18 cr.**
Major Requirements BAF 321, ECN211, ECN212, ECN 308, ECN 313, ECN 321, ECN 323, ECN 431, ECN 433, ECN 435, ECN 451, ECN482.	**33 cr.**
Major Electives Choose 2 faculty elective courses from the following: ACO 311, ECN 325, ECN 327, ECN 439.	**6 cr.**
Free Electives Students are free to choose any 6 credits offered by the University.	**6 cr.**

Note: In rare cases, graduating students may petition to substitute one economics course for another, if the required economics course is not offered in any one semester. In order to have good business skills as required by the job market, students are encouraged to take more business courses as part of the 6-credit free elective courses. Students willing to pursue Graduate studies are encouraged to take more Math courses as part of the 6-credit free elective courses. Students seeking a Ph.D. in the U.S. need to prepare and take the GRE in their last year in the BS.

Minor in Economics (15 credits)

The minor in Economics provides students with analytical tools and critical thinking that will enable them to apply economic reasoning to problem solving in business, economics, and political issues. It gives students an excellent foundation in economic theory and its application. The minor in Economics is an excellent choice for students to work in multidisciplinary fields related to financial economics, engineering management and economics, tourism economics, political economy, and business strategy. It increases their chances of employability, especially if their primary field of expertise interacts with economics..

Student graduating with a minor in Economics should be able to:

- Understand the decision-making mechanisms of households and firms;
- Understand and analyze economic data;
- Analyze and solve economic problems; and
- Evaluate the role of the government in the economy.

Students who follow a minor in economics are required to use the following table:

Course #	Description	Credits	Prerequisite
ECN 211	Principles of Microeconomics	3	___
ECN 212	Principles of Macroeconomics	3	___
	CHOOSE THREE OF THE FOLLOWING WITH AT LEAST ONE 400-LEVEL COURSE		
ECN 308	Quantitative Economics	3	ECN 211, ECN 212, MAT 204
ECN 313	Introduction to Econometrics	3	ECN 211, ECN 212, MAT 204, STA 207 or STA 210 or STA 220
ECN 321	Intermediate Microeconomics	3	ECN 211
ECN 323	Intermediate Macroeconomics	3	ECN 212
ECN 325	Labor Economics	3	ECN 211, ECN 212
ECN 327	History of Economic Thought	3	ECN 211, ECN 212
ECN 431	International Economics	3	ECN 211 and ECN 212
ECN 433	Game Theory	3	ECN 211, MAT 204
ECN 435	Monetary Theory and Policy	3	ECN 211, and ECN 212
ECN 439	Economics of Developing Countries	3	ECN 211, ECN 212
Total		**15 cr.**	

Undergraduate Courses: Economics

ECN 101 Fundamentals of Economics (3.0); 3 cr. This course is an introduction to economic concepts, principles, and analysis. It attempts to equip students with the basics of micro- and macroeconomics. Topics covered include essentials of consumer demand, producer supply decisions, market structure, labor market behavior, business cycle, aggregate supply and demand, and fiscal and monetary policies.

ECN 211 Principles of Microeconomics (3.0); 3 cr. This course is an introduction to economic concepts, principles, and microeconomic analysis. Topics covered include the notions of scarcity and opportunity cost, the analysis of market equilibrium using the framework of demand and supply, the study of consumers' behavior in terms of consumption expenditure, the examination of the production process as well as several costs of production, and output decisions in different market structures. The passing grade of this course for Economics students is "C."Other students should check with their Department's administration concerning their passing grade.

ECN 212 Principles of Macroeconomics (3.0); 3 cr. The Principles of Macroeconomics course introduces students to concepts and issues in economic analysis on a nationwide basis. It discusses the impact of major economic shocks like the Great Depression, the modern practices and their impacts on the country standards of living. Moreover, it highlights the economic and social consequences of unemployment and inflation. Accordingly, it analyzes and interprets the appropriate fiscal and monetary policies that should be applied by the government and the central bank in order to solve such problems. The passing grade for this course for Economics students only is "C." Other students should check with their Department's administration concerning their passing grade.

ECN 308 Quantitative Economics (3.0); 3 cr. This course provides students with a number of quantitative techniques that are typically used in economic analysis with applications in both microeconomics and macroeconomics. As such, the course consolidates the mathematical techniques previously acquired by the students whilst explicitly highlighting their relevance to economic analysis. The main topics covered fall under three main areas: (i) static/equilibrium analysis, (ii) comparative static analysis, and (iii) optimization. *Prerequisites:* ECN 211, ECN 212, MAT 204.

ECN 313 Introduction to Econometrics (3.0); 3 cr. There are many schools of thought on econometric methodology, and in this course we concentrate on the traditional or classical methodology. Students will learn the theory and the application of the Ordinary Least Square (OLS) estimation. Moreover, this course covers inferential statistics on the parameters and the classical linear assumptions on the residuals. Students will learn how to build a robust econometric model and estimate it. *Prerequisites:* ECN 211, ECN 212, MAT 204, STA 207 or STA 210 or STA 220.

ECN 321 Intermediate Microeconomics (3.0); 3 cr. This course studies and analyzes the decisions made by households, firms, employees, and policy-makers and how their decisions affect markets. It combines intuitive, graphical, and mathematical tools of analysis to explain economic decisions. Topics include consumer choice, pricing, and output strategies under the four market structures. *Prerequisite:* ECN 211.

ECN 323 Intermediate Macroeconomics (3.0); 3 cr. This course covers the main topics of macroeconomics. We analyze the forces of the market and the determinants of the general level of output, prices, and employment. We also tackle the relationship between economic growth and business cycle fluctuations. Finally, we study the policies needed to achieve full employment and price stability. This course is in contrast with the principle of macroeconomics course, which is more general and descriptive. The latter avoids how macroeconomists think while this course will put as much emphasis on empirical macroeconomic examples, history of macroeconomic thought, and macroeconomic theory itself. *Prerequisite:* ECN 212.

ECN 325 Labor Economics (3.0); 3 cr. The course is an analytical study of the labor market. It uses microeconomic theory to explain the functioning and the dynamics of labor supply and demand. It examines labor mobility, productivity, wage determination, the decisions of prospective and present labor market participants, and the roles of public policies and labor unions relating to the employment and payment of labor resources. It also covers topics including human capital accumulation, wage determination, inequality in earnings, unions and collective bargaining, training and human resource development, and labor discriminations. *Prerequisites:* ECN 211, ECN 212.

ECN 327 History of Economic Thoughts (3.0); 3 cr. Students study the origins and development of economic thought starting with Adam Smith. The course relates history to the present and looks at the contribution of different economists and schools of thought including, for example, the classical school, the neoclassical school, Marxism, Keynesianism, and marginalism. The course is not a pure course in history, as it uses the past to understand the present and hopefully forecast the future. *Prerequisites:* ECN 211, ECN 212.

ECN 333 Managerial Economics (3.0); 3 cr. This course provides students of business, economics, management, and marketing with systematic analytical tools to managerial economics. The course is an integration of economic theory and methodology with the analytical tools for application to decision-making about the allocation of scarce resources in public and private institutions. Topics covered include risk analysis, theory of consumer choice, analysis of demand, production and cost functions, forms of competition, pricing techniques, profits, and game theory. *Prerequisites:* ECN 211, STA 206 and STA 207 or STA 210 or STA 220.

ECN 431 International Economics (3.0); 3 cr. The international aspects of economics remain as important and controversial as ever. Topics of discussion in this course include absolute and comparative theory, Heckscher-Ohlin theory, Krugman model, equilibrium under free and fixed exchange rate regimes, international monetary system, and optimal currency areas. Based on extra readings, students will understand the causes of past financial crises in developed and developing countries, the growing trade and financial linkages between industrial, emerging and developing countries, the role of international organizations, and the advantages/disadvantages of globalization. *Prerequisites:* ECN 211, ECN 212.

ECN 433 Game Theory (3.0); 3 cr. This course constitutes an introduction for strategic interaction frameworks. As such it provides a thorough investigation of some of the fundamental concepts and techniques of game theory: sequential moves games, simultaneous moves games, mixed-moves games, and mixed strategies. It complements this core-part of the course with some selected subjects. Depending on the time constraint, some elements of the following topics could be covered: uncertainty and information, strategic moves, and repeated games. *Prerequisites:* ECN 211, MAT 204.

ECN 435 Monetary Theory and Policy (3.0); 3 cr. The course discusses monetary theory, the effects of monetary variables on the macroeconomic system, the role of the central bank, and the conduct of monetary policy. It investigates the origins and role of money, theories regarding the supply of and demand for money and the role of money in determining aggregate demand, output, prices, and other key macroeconomic variables. The relationship between money, credit, and debt will be emphasized. This course will also analyze the evolving role of central banking and views regarding the role and conduct of monetary policy, including recent and historical international policy actions. *Prerequisites:* ECN 211 and ECN 212.

ECN 439 Economics of Developing Countries (3.0); 3 cr. The course focuses on development issues in the context of third world problems such as poverty, illiteracy, urbanization, and unemployment. It presents abstract models and then applies them to real world cases. It is a policy-oriented course that aims to enhance students' abilities to understand third world problems and to reach policy conclusions about possible solutions. Topics include meaning of underdevelopment, historical patterns of economic change in the developing countries, population problems, obstacles to development, role of industry and agriculture, inequality of income and wealth distribution, economic planning, and environmental problems linked to development. *Prerequisites:* ECN 211, ECN 212.

ECN 451 Senior Project in Economics (2.0); 2 cr. Students will develop a research proposal outlining the different aspects of the planned work. The proposal must be approved by the supervisor before the planned work for the project can be undertaken. The course aims at enhancing the students' capacity to plan independent research and to communicate this in a research proposal, a final project, and a presentation in front of a jury. Students in this course are introduced to research in a broad area of economics. Since this is a senior standing course, it is designed to apply basic microeconomics or macroeconomics theory developed in introductory and intermediate theory courses to the analysis of contemporary policy issues. Students will learn in this course to apply effective writing and oral communication skills to the analysis of international or national economic problems. *Prerequisite:* Senior Standing.

ECN 482 Internship in Economics (1.0); 1 cr. This course provides students with an opportunity to balance their classroom experience with work experience. Students will have the opportunity to develop new and practical skills by working under the direction and supervision of an experienced practitioner. The internship will be done in cooperating and department-approved firms. A minimum of 150 hours of internship is required. *Prerequisite:* Senior Standing.

FACULTY OF
ENGINEERING

FE

FACULTY DIRECTORY

FACULTY DIRECTORY

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Saab, Christine (FE 0.65 & NLC)

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Laboratory Instructor
Melki, Sylvie (FE -1.15)

FACULTY PROFILE

FACULTY OF ENGINEERING

MISSION, VISION, AND VALUES

Mission
The Faculty of Engineering (FE) at Notre Dame University-Louaize (NDU) endeavors to produce engineers who understand the ethical, social, economic, and environmental contexts of their profession at the local, regional, and international levels, and who apply their knowledge with sound judgment and responsibility to develop ways to utilize the materials and forces of nature in a sustainable manner for the benefit of humankind. The FE is committed to the education of the whole person, according to the University model of liberal arts education and through its applied curricula, quality research, and extra-curricular activities. Students are encouraged to pursue lives of global citizenship, community service, life-long learning, and exemplary leadership. In keeping with the University mission, the Faculty aims to graduate students who are rooted in their faith in God.

Vision
To be recognized as a regional center of excellence for engineering education where highly qualified faculty and outstanding students pursue knowledge within a framework of ethical and social values. This distinguished education will enable students to contribute in a socially responsible manner to the development of Lebanon and the region.

Values

- **Excellence in education and scholarship:** Highly qualified faculty educate students through theory and hands-on instruction using the latest available technologies. High-quality research addresses problems of relevance to the community and enhances classroom instruction;

- **Life-long learning:** Our students will be equipped with the tools and skills that enable them to keep up to date in their field;

- **Service:** Our students will be encouraged to use their knowledge for the service of the community through engineering projects and extra-curricular activities; and

- **Faith and integrity:** In keeping with the tradition of the Maronite Order of the Blessed Virgin Mary (O.M.M.), we aim to produce students that are rooted in their faith in God. This faith expresses itself in respect for God's creation and integrity in their daily professional and social interactions.

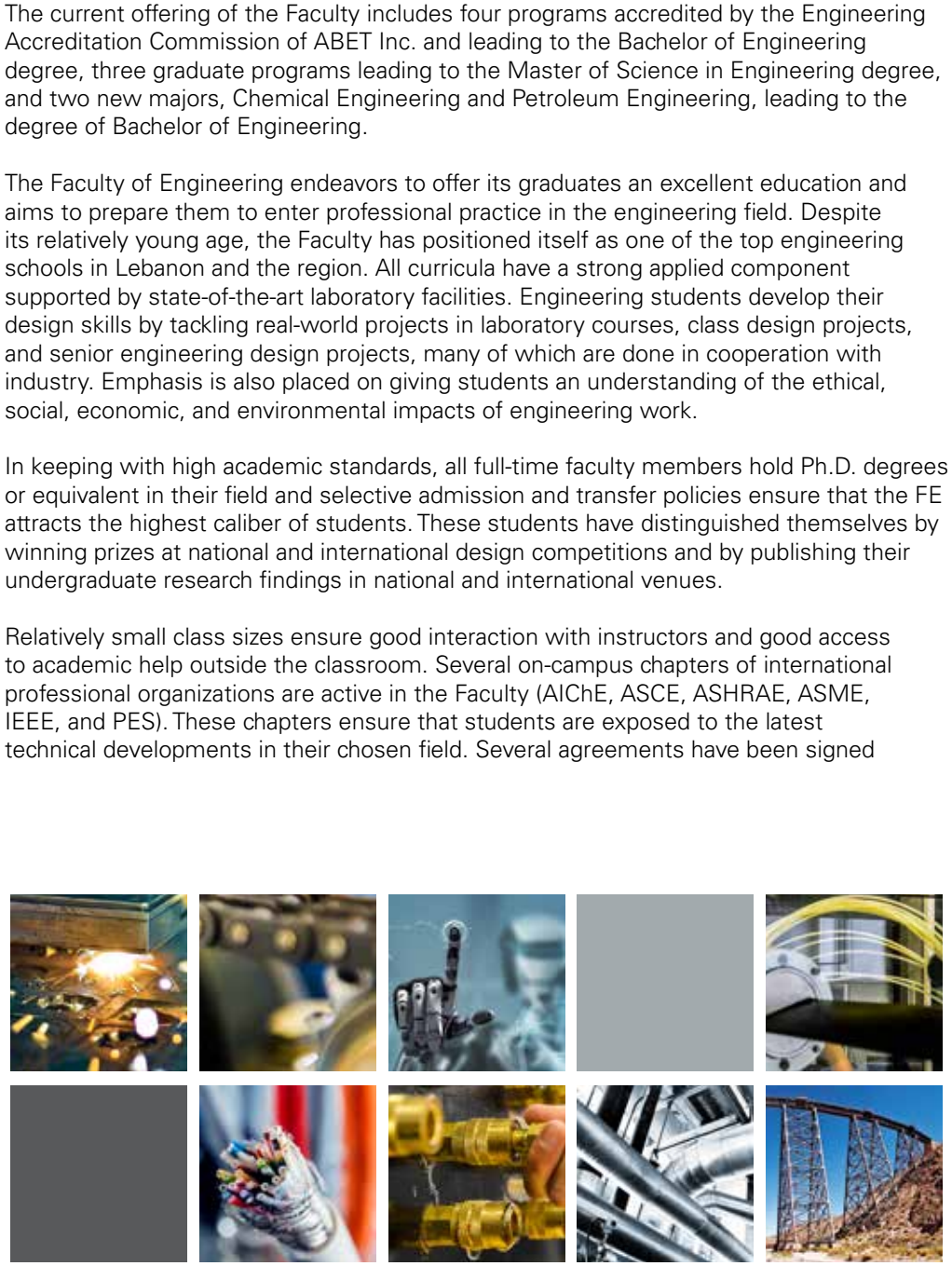
FACULTY PROFILE

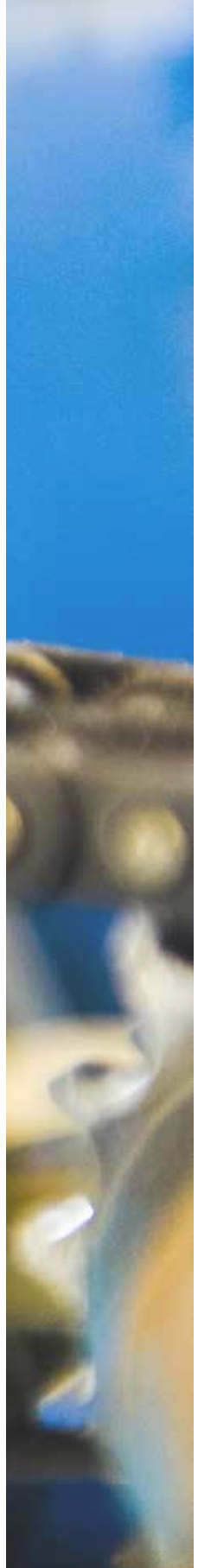
The FE was established in 1996 as the Faculty of Engineering and Architecture by virtue of the Lebanese government under Decree No. 9278. The name was changed in 1997 to the current one, following the transfer of the architecture program to the Faculty of Architecture, Art and Design (FAAD). The Faculty currently enrolls more than 1,200 students in its three Departments and has more than 3,800 alumni around the world. The current offering of the Faculty includes four programs accredited by the Engineering Accreditation Commission of ABET Inc. and leading to the Bachelor of Engineering degree, three graduate programs leading to the Master of Science in Engineering degree, and two new majors, Chemical Engineering and Petroleum Engineering, leading to the degree of Bachelor of Engineering.

The Faculty of Engineering endeavors to offer its graduates an excellent education and aims to prepare them to enter professional practice in the engineering field. Despite its relatively young age, the Faculty has positioned itself as one of the top engineering schools in Lebanon and the region. All curricula have a strong applied component supported by state-of-the-art laboratory facilities. Engineering students develop their design skills by tackling real-world projects in laboratory courses, class design projects, and senior engineering design projects, many of which are done in cooperation with industry. Emphasis is also placed on giving students an understanding of the ethical, social, economic, and environmental impacts of engineering work.

In keeping with high academic standards, all full-time faculty members hold Ph.D. degrees or equivalent in their field and selective admission and transfer policies ensure that the FE attracts the highest caliber of students. These students have distinguished themselves by winning prizes at national and international design competitions and by publishing their undergraduate research findings in national and international venues.

Relatively small class sizes ensure good interaction with instructors and good access to academic help outside the classroom. Several on-campus chapters of international professional organizations are active in the Faculty (AIChE, ASCE, ASHRAE, ASME, IEEE, and PES). These chapters ensure that students are exposed to the latest technical developments in their chosen field. Several agreements have been signed with Institutions in Europe and the USA. These agreements provide opportunities for students to engage in research and graduate studies at reputable universities. Additional agreements are signed with industrial partners on regular basis in order to support the students and help them find internships at a local and international level, as well as promoting hiring opportunities once they graduate.





Given the rapid rate of technological advancements, engineering is fast becoming a profession where one needs to be equipped for life-long learning, to have excellent communication skills, and to have the ability to engage in effective teamwork. These objectives are achieved through the rigorous educational program offered by the Faculty, and they are the qualities that enable NDU students to succeed in today's ultra-competitive job market.

While keeping a firm eye on the latest developments in engineering education and striving to implement them for the benefit of its students, the FE endeavors to maintain a healthy environment in the spirit and mission of a Catholic institution like NDU. The Faculty cares about the human dimension, a feature that different academic or work environments might not take into account.

Engineering is a career of and for the future, and NDU offers a unique engineering education where students have access to the latest technology, qualified instructors, excellent facilities, and exposure to the values of faith, excellence, and service that are embedded in the University mission.

ACADEMIC DEPARTMENTS AND DEGREE PROGRAMS

The FE consists of the following Departments:

- Department of Civil and Environmental Engineering
- Department of Electrical, Computer and Communication Engineering
- Department of Mechanical Engineering

It offers Bachelor programs in Chemical Engineering (CHE), Civil Engineering (CE), Computer and Communication Engineering (CCE), Electrical Engineering (EE), Mechanical Engineering (ME), and Petroleum Engineering (PE). The Faculty offers also graduate (Master's) programs in Civil Engineering, Electrical and Computer Engineering, and Mechanical Engineering. A minor in Engineering Management, open to all Engineering students, is also on the list of programs offered by the Faculty, as well as a self-designed Interdisciplinary minor program.
The Faculty of Engineering houses also the Center for Research on Sustainable Development (CROSD), which aims to investigate sustainability concepts in general with particular attention to regional challenges as regards water, energy, and the environment.

POLICIES AND PROCEDURES

Admission Requirements

Admission to the Engineering programs is governed by the University admission requirements, as outlined in the general section of this Catalog.

Transfer Requirements

The Faculty of Engineering accepts transfer students from Engineering, Sciences, and Architecture majors at recognized universities provided they have completed a minimum of 12 credits. All applicants must be eligible to continue their studies at their home institution.

Transfer students can receive credit for NDU courses listed under the Liberal Arts Curriculum (LAC), Core Requirements, and Free Elective categories of the NDU contract sheet. In order to ensure that the student has achieved the needed outcomes and objectives specified by the Department concerned, the FE reserves the right not to give transfer credit for courses listed under the Major Requirements category even if the student has taken similar courses at his or her institution. For students transferring from Science and Architecture majors, no courses listed under major requirements or technical electives can be transferred.

For a list of required documents and the relevant dates and deadlines, students planning to transfer to the Faculty of Engineering are invited to check with the Office of Admissions at NDU.

Residency Requirements

Full-time students entering the Engineering programs of first-year standing must complete the listed program within eight years of the date of enrollment in the corresponding program.

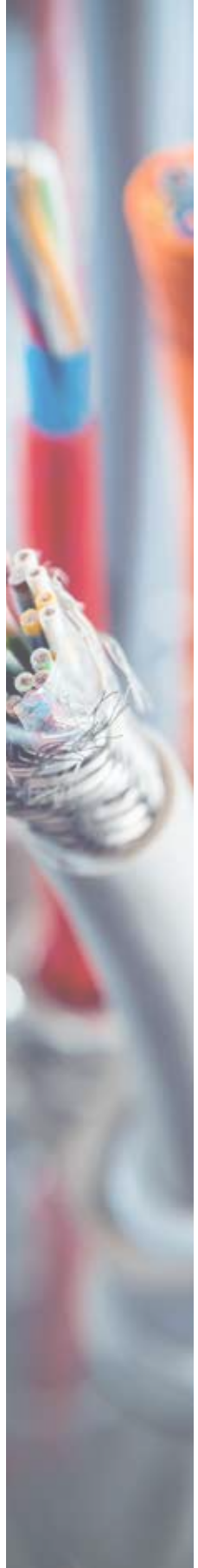
A transfer candidate with a Bachelor of Engineering degree from a recognized institution is required to successfully complete a minimum of 45 credits of upper-division course work including a graduation project. A transfer student without a Bachelor of Engineering degree is required to successfully complete a minimum of 60 credits of upper-division course work including a project work.

Course Load Requirements

In general, students are not allowed to carry more than 17 credits per semester, nor more than 9 credits in a summer session unless otherwise specified in their suggested program. Restrictions may be imposed on students whose overall GPA is less than 2.3/4.0. A student whose overall GPA is no less than 3.2/4.0 may petition to take a maximum load of 18 credits per semester.
Students in their last semester may petition to take up to 20 credits given they have a cumulative GPA of 3.5 and above, and they satisfy the minimum residency requirement for their major. Students with a cumulative GPA higher than 2.3 may petition to take up to 19 credits in their last semester provided they satisfy all other requirements.

Graduation Requirements

To receive a degree of Bachelor of Engineering offered by the Faculty of Engineering, a student must complete a total of 150 credits with an overall GPA of at least 2.0/4.0 and a minimum average of 2.0/4.0 in the major requirements and technical electives. In addition, all major requirements and technical elective courses must be successfully completed with a minimum grade of "C-."



LIBERAL ARTS CURRICULUM

All engineering degree programs share a common pool of Liberal Arts Curriculum (LAC), involving 27 credits of coursework distributed as follows:

Category I. English and Arabic Communication **9 cr.**

A. English Communication (6 cr.)
ENL 213 Sophomore English Rhetoric

and one course from:
ENL 223 Communication Arts
Or
ENL 230 English in the Workplace
Or
ENL 231 Work Ready Now

B. Arabic Communication (3 cr.)
One course from:
ARB 211 Appreciation of Arabic Literature
ARB 212 Advanced Arabic Grammar
ARB 224 Arabic Literature and Human Thought
ARB 231 Technical Arabic
ARB 306 The Modern Arabic Novel and Short Story
ARB 310 Arabic Theater

Category II. Religion **3 cr.**
One course from:
REG 212 Religion and Social Issues
REG 213 Catholicism
REG 215 World Religions
REG 313 The Maronites: Faith and Cultural Heritage
REG 314 Marriage and Family in the Catholic Church

Category III. Ethics **3 cr.**
ENG 310 Ethics in Engineering

Category IV. Citizenship **3 cr.**
One course from:
ENS 202 The Environmental and Sustainable Development
FQM 200 Food Security and Sustainability
POS 201 Introduction to Political Science
POS 209 Citizenship
POS 210 Government and Politics of Lebanon
POS 240 Law and Society
POS 319 Democracy and Human Rights

Category V. Cultural Studies and Social Sciences **6 cr.**
A. Cultural Studies (3 cr.)
ARP 215 Cultural Themes in Lebanese Architecture
AVF 315 World Cinema Survey
COA 350 Current Issues

FAP 215 Art and Culture
HIT 211 History of Lebanon and the Middle East
HTM 201 Fundamentals of Hospitality and Cultural Tourism
HTM 326 Lebanon's Cultural, Heritage and Nature Tourism
LIR 214 Introduction to Literary Genres
LIR 217 American Literature to the End of the 19th Century
LIR 305 Novel to the End of the 19th Century
MUS 210 Music Appreciation
NTR 215 Foods and Nutrition of World Cultures
PHL 211 Logic and the Scientific Method
PHL 232 Ancient World Philosophy
PHL 333 Medieval World Philosophy
PHL 334 Modern and Contemporary World Philosophy
POS 225 Politics of Catholic Social Theory
ROC 301 Romance Cultures

B. Social Sciences (3 cr.)
CSC 206 Games and Society
ECN 211 Principles of Microeconomics
ECN 212 Principles of Macroeconomics
ENG 210 Introduction to Engineering Economy
ENG 220 Engineering Innovation
MGT 201 Fundamentals of Management
MRK 201 Fundamentals of Marketing
PSL 201 Introduction to Psychology
SOL 201 Introduction to Sociology
SOL 313 Family Violence
SOL 316 Society and Women
SOL 322 Family: Sociological Perspectives
SOL 323 Society and Role of Global Intercultural Communication

Category VI. Life and Natural Sciences **3 cr.**
One course from:
AST 201 Discovering Astronomy
BIO 201 Your Body in Action
CHM 201 Chemistry in Everyday Life
ENS 201 Introduction to Environmental Science
ENS 203 Biodiversity
HEA 201 Health Awareness
HEA 204 Contemporary Health Issues
NTR 201 Basic Human Nutrition

Common Engineering Courses

The Faculty of Engineering offers general courses of interest to all degree programs:

ENG 200 Introduction to Engineering (2.0); 2 cr. Engineering design: needs, specifications, feasibility, models. System, detailed alternative and optimum design. Reliability and liability. Communication. Patents and copyrights. Ethics, *Corequisite:* ENG 270.

ENG 202 Computers and Engineering (3.0); 3 cr. Introduction to basic programming in engineering using software tools such as Python and MATLAB. Introduction to number conversions and systems. *Corequisite:* MAT 215.

ENG 210 Introduction to Engineering Economy (3.0); 3 cr. Interest and time value of money. Investment, financing, depreciation, and economic selection. Analysis of engineering costs and capital investment in the design and implementation of engineering projects. *Prerequisite:* ENG 200.

ENG 220 Engineering Innovation (3.0); 3 cr. Introduces students to innovative thinking and practice and how entrepreneurship and technological innovation are organically related. It includes topics, such as life skills in innovative thoughts and actions, engineers vital role in problem-solving and innovation, lessons learned and entrepreneurship, research and development, market strategy, management of entrepreneurial firms and products, networking, startups, examples of projects leading to multinational companies.

ENG 250 Robotics and Society (3.0); 3 cr. This course introduces the basics of industrial and mobile robots. It covers the interaction of robotics with the multiple facets of society (ethics, politics, law, etc.). While robots are doing their tasks with more intelligence, they also raise issues of data protection, privacy and ethics. It also covers basic knowledge of electronics, sensors, actuators, motion couplings, Internet of Things (IoT), etc.

ENG 270 Introduction to Engineering Laboratory (0.2); 1 cr. Introduction to experimental work in engineering for first year students including experiments from different engineering fields. Engineering design projects using relevant software and hardware tools and based on the design process covered in ENG 200. *Corequisite:* ENG 200.

ENG 310 Ethics in Engineering (3.0); 3 cr. Ethical issues in the practice of engineering: corporate responsibility; personal rights; honesty, ethical aspects of safety, risk and liability and conflicts of interest; environmental issues and sustainability; codes of ethics; emphasis on developing the capacity for independent ethical analysis of real cases. *Prerequisite:* ENL 213.

Minor in Engineering Management

Objectives and Outcomes
The Objective of this minor is to provide engineering students with better exposure to project management methods, planning, engineering economy, and leadership. It offers students the necessary tools for managing technical projects in an interdisciplinary environment. This minor is intended to prepare engineering students in any engineering discipline to acquire specific useful management skills and to be able to use technology more appropriately. It strives to produce engineers who understand the market and financial investments of engineering projects.

Eligibility
The Minor in Engineering Management program is open to NDU undergraduate engineering students in their second or third year of studies; and who are in a good academic standing (GPA>2.0). An application, approved by the advisor and the Faculty, is required to enroll in the program.

Curriculum
The Minor in Engineering Management requires at least six courses (18 credits) chosen, as follows:

A: Required Courses (12 credits)

ACO 201 Principles of Accounting I
MGT 201 Fundamentals of Management
CEN 393 Project Management
One course from:
CEN 392 Engineering Economy
ENG 210 Introduction to Engineering Economy

B: Elective Courses (6 credits)

Choose 2 courses from the following pool:

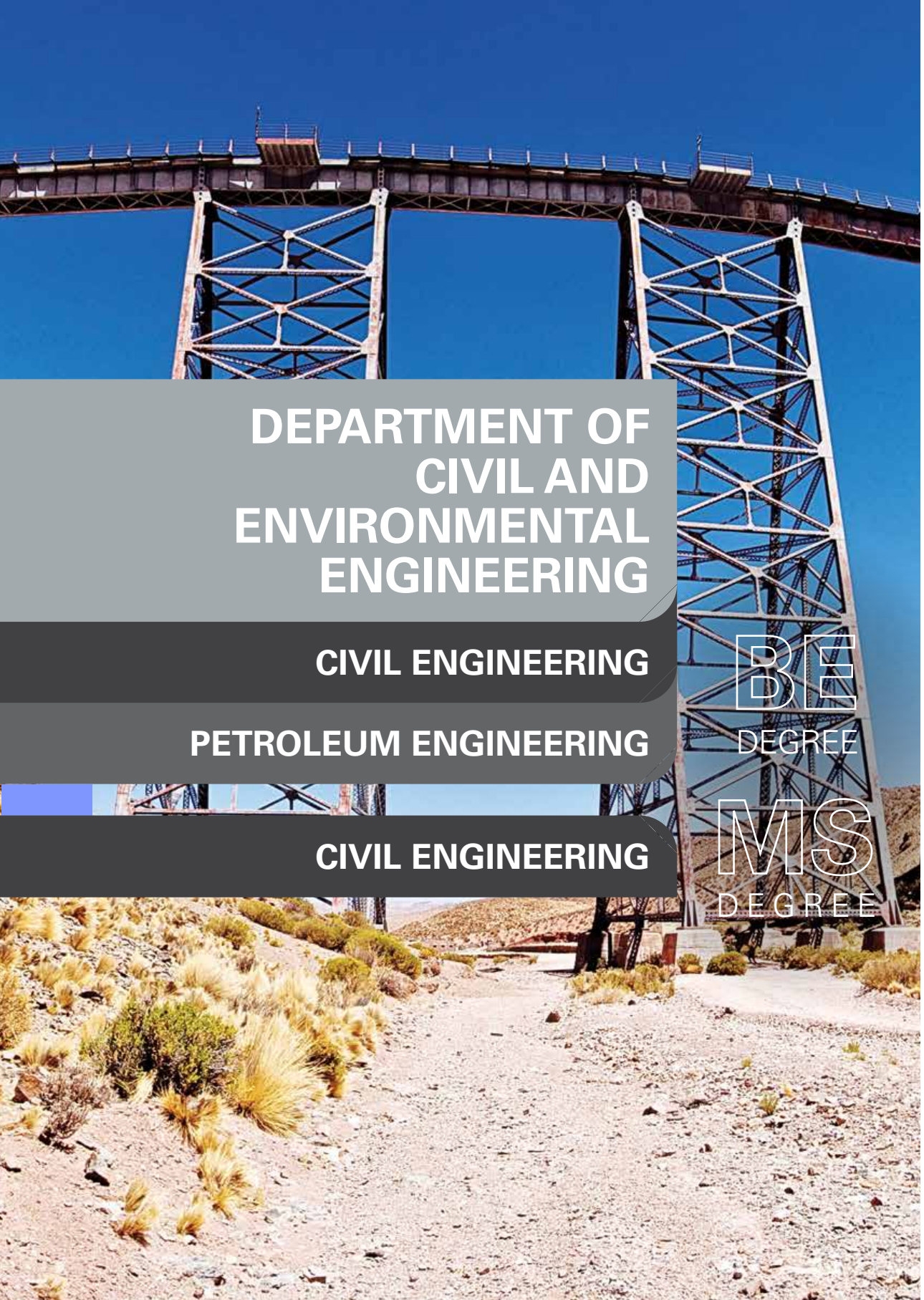
MGT 317 Organizational Behavior
MGT 429 Operations Management
MGT 425 Quantitative Techniques for Management
CEN 351 Civil Engineering Laws and Ethics
CEN 493 Construction Planning
MAT 339 Numerical Analysis
HRM 201 Principle of Human Resources Management
HRM 411 Leadership Quality & Performance
MRK 201 Fundamentals of Marketing

A minimum grade of "C-" is required in each course of the minor. The cumulative GPA should be at least 2.0.

Application Procedure
An Application Form is available at the Department of Civil and Environmental Engineering. Students must submit a petition through their advisor and attach the Application Form. All application forms must be received by July 10 for fall enrollment and January 10 for spring enrollment. Late or incomplete application forms will not be considered.

Withdrawal Procedure
Withdrawal from the Minor in Engineering Management must be done by filing a petition through the advisor.

Self-Designed Interdisciplinary Minor Program
NDU aims to provide students with the programs they need for their future and offers them the opportunity to design their own Self-Designed Interdisciplinary Minor program. Students who would like to explore this option have to fill in the minor proposal with the collaboration of the concerned Faculty and Office of the Registrar. For guidelines, rules and regulations of the Self-Designed Interdisciplinary Minor, kindly refer to the Office of Registrar.



DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

CIVIL ENGINEERING

PETROLEUM ENGINEERING

BE DEGREE

CIVIL ENGINEERING

MS DEGREE

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

Professor: Harb, Jacques

Associate Professors: Chakar, Elie; Nasr, George; Salem, Talal; Zehil, Gerard-Philippe-Guy-May.

Assistant Professors: Hajj, Claudette; Saab, Christine.

Laboratory Instructors: Bichara, Louise; Haddad, Wissam; Sleiman, Sawsan.

THE DEGREE OF BACHELOR OF ENGINEERING IN CIVIL ENGINEERING

Mission

The Civil Engineering Program seeks to produce civil engineers who use their knowledge and ability to design and construct sustainable civil and environmental engineering systems which both serve the needs of society and adhere to professional ethical standards. The program is to prepare students to engage in life-long learning and to be leaders who understand the practical aspects of engineering along with successful management and business practices and public policy. Students and graduates are prepared to successfully compete for regional and international grants and positions.

Program Educational Objectives

The program will prepare students to:

- Apply technical and non-technical skills to design, construct and manage sustainable projects;
- Exhibit ethical and professional commitments to the community and the environment;
- Pursue graduate work and continuing education; and
- Become leaders who demonstrate strong communication, multidisciplinary teamwork, and management skills in their chosen profession.

Program Learning Outcomes

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Degree Requirements

The Department of Civil and Environmental Engineering offers one program leading to the degree of Bachelor of Engineering in Civil Engineering. The course requirements of the degree involve a total of 150 credits divided into the following pools:

Liberal Arts Curriculum **27 cr.**

Core Requirements **42 cr.**
CHM 211, CHM 271, GEO 201, ENG 200, ENG 202, ENG 270, MAT 213, MAT 215, MAT 224, MAT 235, MAT 326, MAT 339, MEN 201, MEN 215, PHS 206, PHS 275, PHS 373.

Major Requirements **65 cr.**
CEN 202, CEN 203, CEN 204, CEN 210, CEN 220, CEN 221, CEN 250, CEN 251, CEN 271, CEN 304, CEN 311, CEN 320, CEN 330, CEN 343, CEN 360, CEN 361, CEN 362, CEN 365, CEN 392, CEN 393, CEN 431, CEN 440, CEN 443, CEN 461, CEN 463, CEN 470, CEN 472, CEN 598, CEN 599.

Approved Professional Training **1 cr.**
CEN 489.

Technical Electives **12 cr.**
Choose any four courses from the following pool:
CEN 370, CEN 351, CEN 364, CEN 407, CEN 430, CEN 493, CEN 520, CEN 521, CEN 522, CEN 524, CEN 530, CEN 532, CEN 543, CEN 544, CEN 545, CEN 546, CEN 560, CEN 580, CEN 589, CEN 594, MEN 400.
All 600 Level courses are considered Technical Electives.

Or you may choose to follow a concentration on one of the tracks below:
Concentration: Structural and Material Engineering
CEN 407, CEN 493, CEN 520, CEN 521, CEN 522, CEN 524, CEN 580, CEN 594, MEN 400.
Concentration: Geo-Environmental Engineering
CEN 493, CEN 530, CEN 532, CEN 560, CEN 580, CEN 594.
Concentration: Transportation and Urban Planning
CEN 493, CEN 543, CEN 544, CEN 545, CEN 546, CEN 594.
Concentration: Construction Management
CEN 351, CEN 370, CEN 493, CEN 594.

Free Electives **3 cr.**
Include any courses, of sophomore level (200-level) or above, offered by the University.

Undergraduate Courses: Civil Engineering

CEN 201 Engineering Mechanics (3.0); 3 cr. Forces; free body diagrams; beams; trusses, tension, compression, shear and bending moment diagrams; stress-strain relationship; stress in beams due to bending and shear forces; torsion of circular members, buckling of columns. Opened only to EE and CCE students.

CEN 202 Statics (3.0); 3 cr. Forces, moments and couples; free body diagrams; problems involving beams, trusses, and various engineering applications. *Corequisite:* ENG 200.

CEN 203 Mechanics of Materials (3.0); 3 cr. Tension, compression, shear and bending moment diagrams; torsion; stress-strain relationship; stresses in beams; pressure vessel; combined loading and asymmetric bending; Mohr's circle beam deflections; buckling of columns. *Prerequisite:* CEN 202.

CEN 204 Mechanics of Materials Laboratory (0.2); 1 cr. Testing for material characterization. Experiments related to static and fatigue testing of various types of materials. Tests include tension, compression, bending and buckling. *Prerequisite:* CEN 203.

CEN 210 Structures I (3.0); 3 cr. Structural forms; analysis of structurally determinate structures; moving loads, influence lines; introduction to indeterminate structures. Collapse and analysis. *Prerequisite:* CEN 203.

CEN 220 Soil Mechanics (3.0); 3 cr. Stress-strain relations and properties of soil, seepage and flow nets. Bearing capacity of soils, footings on sand and clay. *Prerequisite:* CEN 203.

CEN 221 Soil Mechanics Laboratory (0.2); 1 cr. The nature of soil behavior; laboratory tests include physical properties of soils, stress-strain relationships, compressibility, and shear strength. *Prerequisite:* CEN 220.

CEN 250 Surveying (2.0); 2 cr. Surveying and instrumentation; Introduction to optical, photographical, mathematical, and geometrical principles relevant to photogrammetry and remote sensing; introduction to global positioning system.

CEN 251 Field Surveying (0.2); 1 cr. Field plane surveying; topographic mapping; location survey and route surveying. *Corequisite:* CEN 250.

CEN 271 Civil Engineering CAD (0.2); 1 cr. This is an introductory course lab on CAD tools to be used by engineers and architects. CAD systems are interface soft wares. The CAD systems shall be used in conjunction with civil engineering basic drafting tools to form visualizations in 2D and 3D engineering entities. It constitutes the basic knowledge in AutoCAD, TransCAD, and other CAD software systems.

CEN 304 Construction Materials (3.0); 3 cr. Introduction to construction materials for civil engineers. Characteristics of the primary material types used in civil and construction engineering. Overview of various test procedures for the evaluation of materials. *Prerequisite:* CEN 203.

CEN 311 Structures II (3.0); 3 cr. Analysis of statically indeterminate structures; methods of consistent deformations, slope, deflection, and moment distribution. Energy theorems and applications to trusses, beams, and frames. *Prerequisite:* CEN 210.

CEN 320 Foundation Engineering (3.0); 3 cr. Subsurface explorations, methods of exploration and sampling, bearing capacity and design of shallow and deep foundations, settlement analysis, stability of retaining walls. *Prerequisite:* CEN 220.

CEN 330 Concrete Design I (3.0); 3 cr. Behavior of reinforced concrete. Ultimate

strength design method. Design of beams for flexure and shear, one-way slabs, and short columns. *Prerequisite:* CEN 210.

CEN 343 Transportation Engineering I (3.0); 3 cr. Transportation in society, and mobility; people and goods. Introduction to operating principles and procedures for transportation systems. Level-Of-Service, vehicle flow and capacity. Traffic analyses and control. Transportation Planning; Travel Demand Forecasts; demand-supply relationships; modeling. Project. Prerequisite: Third Year Standing. *Corequisite:* MAT 326.

CEN 351 Civil Engineering Laws and Ethics (3.0); 3 cr. Survey of Lebanese construction codes and regulations; civil engineering practice as related to environmental destruction and moral behavior.

CEN 360 Hydraulics (3.0); 3 cr. Pipe flow, open channel flow, hydraulic machinery; flow measurement. *Prerequisite:* MEN 215.

CEN 361 Hydraulics Laboratory (0.2); 1 cr. Applying continuity, momentum, and energy principles to flow problems. Experiments include laminar and turbulent flows, major and minor losses, hydraulic jump, weirs, flow measurements. *Prerequisite:* CEN 360.

CEN 362 Environmental Engineering (3.0); 3 cr. Quantitative evaluation of the environmental, economic, and technical problems involved in control of pollutants of the air, water, and land. *Prerequisite:* MEN 215.

CEN 364 Hydrology (3.0); 3 cr. Fundamentals of hydrological cycle, catchment, losses, hydrographs and hyetographs. The course includes design topics with hydrologic applications in civil engineering and selected from: flood frequency analysis, determination of design rainfall intensity and hyetographs, peak flow estimation, design hydrograph estimation, subsurface Hydrology and groundwater process, modelling, and drought risk analysis/yield hydrology; and effect of climate change on hydrology. *Prerequisite:* MEN 215 or MEN 320.

CEN 365 Environmental Engineering Laboratory (1.0); 1 cr. Laboratory and field experiments related to pollution of air, water and soil. Tests include air sampling, water testing, sound measurement, wastewater treatment, compost tests and landfill cover performance. *Prerequisite:* CEN 362.

CEN 370 Electrical, Mechanical, and Sanitary Systems (3.0); 3 cr. Electrical requirements and distribution in buildings; design of heating, cooling, and ventilation systems; selection and design of water distribution and plumbing systems.

CEN 392 Engineering Economy (3.0); 3 cr. Engineering economic analysis for project and design evaluation, decision making including replacement and retention, budget limitation, breakeven and sensitivity analysis. Case studies in the design/system analysis process, time value of money and economic evaluation of alternatives, risk analysis, and the effects of depreciation and taxes. *Prerequisites:* ENG 200, Junior Standing.

CEN 393 Project Management (3.0); 3 cr. Fundamentals of Project Management, engineering organization, planning, budgeting, scheduling and cost controls, bidding process, tender documents and contracts. Examples will be given in all fields of Engineering. *Prerequisite:* Junior Standing.

CEN 407 Advanced Mechanics of Materials (3.0); 3 cr. Three dimensional strain and stress states, application of energy methods, torsion of noncircular members, nonsymmetrical bending of straight beams, shear center for thin-wall beam cross sections, curved beams. *Prerequisite:* CEN 210.

CEN 430 Concrete Design II (3.0); 3 cr. Study of the strength, behavior, and design of indeterminate reinforced concrete structures, with primary emphasis on slab systems; emphasis on the strength of slabs and on the available methods of design of slabs spanning in two directions, with or without supporting beams. Analysis and design of long columns, and footings. *Prerequisite:* CEN 330.

CEN 431 Concrete and Pavement Design Laboratory (0.2); 1 cr. Experiments dealing with concrete and asphalt properties, proportioning, design and analysis. *Prerequisite:* CEN 330. *Corequisite:* CEN 443.

CEN 440 Steel Design (3.0); 3 cr. Design of steel beam girders, tension member columns, bolted, riveted, and welded connections. *Prerequisite:* CEN 210.

CEN 443 Transportation Engineering II (3.0); 3 cr. The geometric design of highways, drainage, roadbed, environmental concerns, cost. Highway interchanges concepts. Roadbed construction; pavement design, construction, and management. Intermodal stations, airports design concepts. Project. *Prerequisite:* CEN 343.

CEN 461 Water Pollution control and treatment (3.0); 3 cr. Fundamental principles and engineering application of physical, chemical, and biological processes (like sedimentation, filtration, coagulation, flocculation, membranes, aerobic, anaerobic biological processes) are discussed. *Prerequisite:* CEN 362 or Department approval.

CEN 463 Water and Waste Water Networks (3.0); 3 cr. Quantities of water and wastewater; collection, transportation, and distribution; water distribution network; design of sanitary and storm- water sewer systems. *Prerequisite:* CEN 360.

CEN 470 Introduction to Building Information Modelling (0.2); 1 cr. Concepts and methods of Building Information Management (BIM), BIM standards, and BIM in an urban context. The course provides students essential knowledge required to manage and implement BIM technologies in the design and construction of facilities, with an emphasis on structural and civil roles, and use of BIM software in the process of preparing the models, analysis and documentation. *Prerequisite:* CEN 271.

CEN 472 Geographic Information System in Civil Engineering (0.2); 1 cr. Fundamentals and application of Geographic Information Systems (GIS) in civil and environmental engineering. Students are introduced to GIS technology for spatial design/analysis; applications in facilities management, urban infrastructure, water resources, environmental engineering. *Prerequisites:* CEN 250, CEN 271.

CEN 489 Approved Professional Training (0.0); 1 cr. Department approved summer training practice in Civil Engineering. A report is required. *Prerequisite:* Department approval.

CEN 493 Construction Planning (3.0); 3 cr. Job Planning and management, selection of construction equipment, soil stabilization, tractors, scrapers, excavating equipment, trucks, operation analysis, drilling rock, blasting, tunneling.

CEN 520 Matrix Method for Structural Analysis (3.0); 3 cr. Displacement (stiffness) method, truss applications, rectilinear, tapered and curved beams, matrix transformation, frame analysis, influence coefficients and coordinate transformation, force method. *Prerequisite:* CEN 311.

CEN 521 Dynamics of Structures (3.0); 3 cr. Theory and application of structural dynamics for single and multiple degree-of-

freedom models of buildings due to dynamic forces. Concepts of overall seismic design of buildings, proportioning, and detailing to achieve satisfactory seismic response. *Prerequisite:* Senior Standing.

CEN 522 Structural Project (3.0); 3 cr. Usage of commercial software packages in the analysis and design of multi-story concrete and steel buildings, Bridges and storage tanks. *Prerequisite:* CEN 430.

CEN 524 Prestressed Concrete (3.0); 3 cr. Fundamentals of analysis and design of post-tensioned and pre-tensioned structural members, proportioning of members, calculation of the amount and positioning of reinforcement. *Prerequisite:* CEN 330.

CEN 530 Slope Stability (3.0); 3 cr. Slope stability analysis methods. Use of software packages. *Prerequisite:* CEN 320.

CEN 532 Advanced Foundation Engineering (3.0); 3 cr. Soil exploration: geotechnical and geophysical methods, special cases of shallow and deep foundations analysis and design, sheet piles, soil improvement, soil-foundation interaction, software application. *Prerequisite:* CEN 320.

CEN 543 Transportation Engineering III (3.0); 3 cr. One, two, or three topics in Transportation Engineering shall be offered. The course shall be concerned with the process of analyses and design of the topic concerned. Topics, such as airports; ports and harbors; railways and railway stations; traffic; supply-demand modelling; others. Projects. Topics shall be specified when the course is offered. *Prerequisite:* Fourth Year Standing *Corequisite:* CEN 443.

CEN 544 Designs of Highway Bridges and Interchanges (3.0); 3 cr. Geometric design of highway interchanges and analyses and design of simple highway bridges. Project. *Prerequisites:* Fourth Year Standing, Instructor approval.

CEN 545 Sustainable Urban Mobility Planning (3.0); 3 cr. Concepts of sustainable urban mobility planning. Topics include mobility, accessibility, human-centered planning, integrated transport systems, and transport equity. *Prerequisite:* CEN 392.

CEN 546 Transport Impacts and Sustainable Mobility (3.0); 3 cr. Concept of sustainable mobility and the various impacts resulting from transport. The environmental, economic, and social costs of the transport are discussed as well as the various tools and techniques that are used for assessing the impacts of transportation. *Prerequisites:* CEN 392, MAT 326, CEN 472.

CEN 560 Air pollution Engineering (3.0); 3 cr. Characterization of sources, emissions, transport, transformation, effects, and control of air pollutants. *Prerequisite:* CEN 362, or instructor's approval.

CEN 580 Finite Element Methods I (3.0); 3 cr. Theory and application of finite element methods as an analysis tool for two-dimensional stress problems in engineering. *Prerequisite:* CEN 203 or MEN 202.

CEN 589 Cooperative Professional Experience (6.0); 6 cr. This course gives students an opportunity to apply and extend academic knowledge while employed with qualified employees. A final report is required. *Prerequisite:* Department Approval.

CEN 594 Selected Topics in Civil Engineering (3.0); 3 cr. Structured presentations of new and developing areas of knowledge in civil engineering offered by the department to augment the formal courses available. *Prerequisite:* Individually identified for each offering under this course number.

CEN 598 Engineering Design I (1.0); 1 cr. The objective of this course is to develop a project proposal that includes the following items: Choice of project topic, literature survey, market analysis, feasibility study, project timeline, list of materials and cost, engineering ethics issues, social and environmental impact, etc. *Prerequisite:* Department approval.

CEN 599 Engineering Design II (2.0); 2 cr. Implementation of the engineering design project that was proposed in CEN 598. Includes report, final presentation. *Prerequisite:* CEN 598.

THE DEGREE OF MASTER OF SCIENCE IN CIVIL ENGINEERING

Program Objectives

The program will prepare students to:

a. Support our students in acquiring theoretical and applied knowledge in their field of specialization.
b. Develop their abilities to grow intellectually and professionally, be independent thinkers, and exercise leadership roles in society.
c. Prepare them for longer term academic advancement through quality research and scholarly activities.

Admission Requirements

Admission to the MS in Civil Engineering program is subject to the University graduate admission requirements, as stated in this Catalog under "Graduate Admission." In addition, the following requirements are to be met:

- Bachelor of Engineering degree in Civil Engineering or its equivalent from a recognized university (holders of BS degrees in Civil Engineering will have to take a set of remedial courses to be specified on a case by case basis in order to meet the total number of credits required);
- Cumulative GPA of 3.0 minimum (or its equivalent from a recognized faculty of engineering);
- GRE Scores; and
- Approval of the Faculty Graduate Committee.

Furthermore, applicants should be able to demonstrate proficiency in the English language. All English requirements, as stated in this Catalog under "Graduate Admission," are to be fulfilled.

Graduation Requirements

The program leads to the degree of Master of Science in Civil Engineering awarded once the following requirements are met:

- The candidate must complete a total of 30 credits with a minimum cumulative GPA of 3.0/4.0. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 Cs per program. Failed courses may be repeated once, provided that the grade on the failed course is equal to "D" or higher. Failing a course with an "F" grade means an automatic exclusion from the program;
- Holders of a Bachelor of Engineering in Civil Engineering (5-year program leading to the degree of BE) from a recognized university may apply to transfer a maximum of 18 credits from their undergraduate upper level major elective courses. Only courses with a "B" grade can be considered for transfer; and
- The residency requirements and maximum load per semester are as per University rules and regulations for graduate programs.

Course Requirements

The 30 credits are composed of:

- 12 credits (4 courses) of required courses in the major field;
- 9 credits of technical electives (3 courses) from the other three fields, listed below, or from other departments upon the decision of the Faculty Graduate Committee;
- 3 credits (1 course) of graduate electives approved by the Faculty Graduate Committee; and
- 6 credits of research dedicated to writing a Master Thesis and defense. The topic selected should be related to the major field. A student selects a topic of research with the assistance of his or her advisor. A thesis defense is to be performed in front of a committee.

Major Fields

A. Transportation and Urban Planning

CEN 617, CEN 643, CEN 644, CEN 645, CEN 646, CEN 647, CEN 648, CEN 649, CEN 650, CEN 651, CEN 652, CEN 653, CEN 654, CEN 655, CEN 656, CEN 657, CEN 658, CEN 659, CEN 693, CEN 696, CEN 699.

B. Water Management and Geo-Environmental Engineering

CEN 601, CEN 603, CEN 606, CEN 607, CEN 617, CEN 620, CEN 621, CEN 622, CEN 623, CEN 651, CEN 661, CEN 662, CEN 663, CEN 664, CEN 665, CEN 666, CEN 667, CEN 669, CEN 699.

C. Structures and Materials

CEN 600, CEN 601, CEN 602, CEN 603, CEN 604, CEN 605, CEN 606, CEN 607, CEN 611, CEN 612, CEN 613, CEN 614, CEN 615, CEN 616, CEN 617, CEN 645.

D. Project Management

CEN 617, CEN 658, CEN 669, CEN 684, CEN 685, CEN 690, CEN 691, CEN 692, CEN 693, CEN 694, CEN 695, CEN 696, CEN 697, CEN 698, CEN 699.

E. Thesis CEN 790

Graduate Courses: Civil Engineering

CEN 600 Advanced Mechanics of Materials (3.0); 3 cr. Three-dimensional strain and stress states, application of energy methods, torsion of noncircular members, nonsymmetrical bending of straight beams, shear center for thin-wall beam cross sections, curved beams.

CEN 601 Elasticity (3.0); 3 cr. Stress-Strain, elasticity formulation, solution by potentials, stress functions, torsion, thick cylinders, rotating disks, thermal stresses, straight simple beams, curved beams. *Prerequisite:* CEN 600.

CEN 602 Matrix Method for Structural Analysis (3.0); 3 cr. Displacement (stiffness) method, truss applications, rectilinear, tapered and curved beams, matrix transformation, frame analysis, influence coefficients and coordinate transformation, force method.

CEN 603 Dynamics of Structures (3.0); 3 cr. Theory and application of structural dynamics for single and multiple degree-of-freedom models of buildings due to dynamic forces. Concepts of overall seismic design of buildings, proportioning, and detailing to achieve satisfactory seismic response.

CEN 604 Design of Structural Systems (3.0); 3 cr. The whole structural design process including definition of functional requirements, selection of structural scheme, formulation of design criteria, preliminary and computer-aided proportioning, and analysis of response, detailing.

CEN 605 Earthquake Resisting Structures Design (3.0); 3 cr. Earthquake analyses and design of structures; static and dynamic forces, Lebanese earthquake design codes; Soil properties and local ground conditions, ductility and demands on structural components; inelastic behavior of structural components, redundancy. Shear walls and bracing under cyclic loading of concrete structures. Design applications.

CEN 606 Finite Element Methods (3.0); 3 cr. Theory and application of finite element methods as an analysis tool for two-dimensional stress problems in engineering; solution of advanced three-dimensional stress problems in engineering.

CEN 607 Nonlinear Finite Element Methods (3.0); 3 cr. Isoparametric finite element discretization, incremental equations of motion. Total and update Lagrangian formulation. Nonlinear geometry, nonlinear material problems. Use of software packages for final solutions. *Prerequisite:* CEN 606.

CEN 611 Prestressed Concrete 3.0); 3 cr. Fundamentals of analysis and design of post-tensioned and pre-tensioned structural members, proportioning of members, calculation of the amount and positioning of reinforcement.

CEN 612 Concrete Technology - Materials and Admixtures (3.0); 3 cr. Properties, behavior and technology of concrete in both fresh and hardened states; microstructure properties, strength, dimensional stability, and durability. Concrete materials, mix proportioning, early age properties, hydraulic cements, chemical admixtures. Advances and future challenges in concrete technologies and mechanics. Project.

CEN 613 Strengthening and Rehabilitation of Concrete Structures (3.0); 3 cr. Evaluation, analyses and design of concrete existing structures. Strengthening and repair methods and procedures to rehabilitate concrete structures. Non-destructive testing methods, properties, behavior and application of repair materials chemically-modified, durability. Design Project.

CEN 614 Special Topics in Concrete (3.0); 3 cr. Earthquake load and seismic design of structures. Torsion in reinforced concrete members. Design of shear walls.

Design of corbels, brackets and deep girders. Design of rectangular and circular water tanks. Design of spherical domes.

CEN 615 Design of Composite Construction (3.0); 3 cr. Introduction to composite construction. Composite beams, composite box girders in bridges, composite floors and composite columns. Design of Multi-storied commercial and residential composite building. Seismic behavior of composite structures.

CEN 616 Advanced Steel Design (3.0); 3 cr. Design of structural systems for multiple loads, combined loading, torsion, and fatigue in structural members, plate and box members.

CEN 617 Probability and Statistics for Civil Engineers (3.0); 3 cr. Introduction to random variables, probability distributions, expectations and moments. Random processes. Methods of perturbation. Monte Carlo simulation. Stochastic finite element.

CEN 621 Deep Foundations (3.0); 3 cr. Subsurface exploration and sampling, design of sheeting and bracing systems for deep foundations. Pile and corrosion analysis.

CEN 622 Slope Stability (3.0); 3 cr. Slope stability analysis methods including stresses in soils, Mohr circles, failure theories, shear strength of cohesive and cohesion less soils. Use of software packages is also applied in an assigned project.

CEN 623 Geotechnical Reliability Analysis and Reliability-Based Design (3.0); 3 cr. Review of Probability, Characterization of geotechnical uncertainties, Estimating random properties from spatial data, Simulation of geotechnical variability, Reliability analysis methods (FOSM, FORM, Monte Carlo simulation etc…), Reliability-based design of geotechnical structures, Partial factors and Load and Resistance Factor Design (LRFD).

CEN 643 Transportation Engineering III (3.0); 3 cr. One, two, or three topics in Transportation Engineering shall be offered. The course shall be concerned with the process of analyses and design of the topic concerned. Topics, such as airports; ports and harbors; railways and railway stations; traffic; supply-demand modeling; others. Projects.

CEN 644 Designs of Highway Bridges and Interchanges (3.0); 3 cr. Geometric design of highway interchanges and analyses and design of simple highway bridges. Capacity analysis and site selection. Environmental and socio-economic impacts of transportation structures. Software's Application; Project.

CEN 645 Pavement Design and Management (3.0); 3 cr. Highway and airport pavement design; flexible and rigid pavements; ESAL calculations, pavement materials, stresses and deflections in pavements; pavement drainage; design of overlays; pavement management, priority programming and rehabilitation. Project.

CEN 646 Traffic Engineering (3.0); 3 cr. Fundamentals of traffic engineering, queuing theory, AASHTO and HCM criteria; capacity analysis and level of service concepts, traffic demand at at-grade intersections and highway segments; intersections design and control; weaving, interchanges. Software application. Project.

CEN 647 Urban Transportation Planning (3.0); 3 cr. Urban travel demand pattern time evolution in metropolitan areas; travel demand surveys; demand and supply; land-use models, macro-level urban transportation models (traditional four-step and activity-based), and micro-level operational models. Software application. Project.

CEN 648 Transportation and Land Development (3.0); 3 cr. Land subdivision theory and practice; socio-demographic forecasts, land use planning and zoning, impact on metropolitan road network; urban development, site planning and traffic impact studies (TIS); site access and parking facilities, and local streets design; interdependence of transportation with urban land-use patterns. Project.

CEN 649 Transportation System Analysis (3.0); 3 cr. Systems analysis and decision-making, using concepts from economics, engineering, public policy analysis, operations research, and management science; application to transportation systems; air pollution, mitigation techniques, traffic congestion and road safety issues. Project.

CEN 650 Advanced Surveying and GPS (3.0); 3 cr. Land subdivision theory and practice; total station field usage and data digitization; highway and land surveys and location; remote sensing and global positioning system (GPS). Project.

CEN 651 Infrastructure Planning and GIS (3.0); 3 cr. Theory and a comprehensive practical application of the geographic information systems (GIS) and remote sensing technologies for analysis and solution of different transportation and infrastructure issues (GIS-T), impact related issues and mitigation techniques. Project.

CEN 652 Rail Roads, Ports and Harbors (3.0); 3 cr. Planning and design of railway tracks and stations, overview of port planning, management and operations with reference to terminal processes and engineering aspects of port development, port management models, port pricing and financing. Project.

CEN 653 Airports; Planning and Design (3.0); 3 cr. Airport planning and design parameters, site selection. Airports layouts and capacity, runways and taxiways; land side and airside terminal building layout and design. Demand forecasting, access and air traffic operation and management. Project.

CEN 654 Building laws, Site Selection and Parking (3.0); 3 cr. A comprehensive review of Lebanese building and construction laws with respect to design criteria, site parking and impact criteria, design principles and of on- and off-street design, mechanical parking systems, preliminary project sizing. Civil engineering practice and ethical issues. Project.

CEN 655 Sustainable Energy for Transportation (3.0); 3 cr. Topic of energy in transportation. The impacts of various conventional and innovative fuels are discussed. Energy flow and system boundaries are addressed as well as on-board technologies and infrastructural needs.

CEN 656 Planning using GIS (3.0); 3 cr. Theory and a comprehensive practical introduction to the use of geographic information systems (GIS) and remote sensing technologies for the analysis and solution of different water and environmental problems (for example urban planning, pipe-network systems analysis, river basin management, groundwater analysis and water pollution assessment).

CEN 657 Intelligent Transportation Systems (3.0); 3 cr. Advanced technology in transportation. Intelligent Transport Systems (ITS) Architecture and Modules. The field of ITS component technologies and its applications and products. Contemporary issues in the application of advanced technology in transport, societal impacts and the roles of the public and private sectors.

CEN 658 Transportation Economics (3.0); 3 cr. The concepts, theory and methods of economic theory in transport demand analysis, transport pricing, congestion pricing tools, welfare considerations, and transport policy evaluation. Transportation projects funding and its new trends such as public-private partnership and procurement strategies.

CEN 659 Transportation Asset Management (3.0); 3 cr. The concepts, theory and methods of infrastructure management, asset management principles, concepts and identification of asset

performance requirements, community and stakeholder benefits and consultation, system performance and measures, level of service and Infrastructure Management Information Systems (IMIS).

CEN 620 Advanced Soil Mechanics (3.0); 3 cr. Soils characterization, mineralogy, stresses in soils, basic porous media flow principles, effective stress principle, compaction, consolidation theory and application drained and undrained stress-strain-strength concepts.

CEN 661 Air pollution Engineering (3.0); 3 cr. Characterization of sources, emissions, transport, transformation, effects, and control of air pollutants.

CEN 662 Solid Waste Management (3.0); 3 cr. Engineering principles, socioeconomic and regulatory issues related to solid and hazardous waste management. Integrated solid waste management system, hazardous waste management practices. Design and decisions in waste management alternatives.

CEN 663 Bioremediation (3.0); 3 cr. Microbiology, Cell structure, morphology, cell nutrition and growth, energy transfer and utilization, aerobic and anaerobic microbial metabolism, biological wastewater process theory and modeling, biological nutrients removal, and disinfection of relevant microorganisms, enzyme kinetics and kinetic coefficients for biotreatment, laboratory techniques of treatment.

CEN 664 Integrated Water Management (3.0); 3 cr. Water resources, water quality, planning and management. Watershed stresses, ecological endpoints; optimization, environmental protection; total maximum daily load process; standards and environmental goals; economic and equity issues; and watershed restoration. Legal framework, Clean Water Act, EU Water Framework and the Lebanese Framework.

CEN 665 Advanced Hydrology (3.0); 3 cr. Hydrologic principles of surface and ground water as an integrated resource. Hydrologic cycle, hydrologic measurements and monitoring, surface and ground water hydrology. Hydrologic design, stochastic hydrology, and simulation modeling.

CEN 666 Advanced Water and Wastewater Treatments (3.0); 3 cr. Design for removal of impurities from water. Treatment, unit operations and processes. Industrial wastewater, advanced chemical treatment technologies, land treatment, membrane technologies, liquid and solid streams recycling or reuse.

CEN 667 Water Distribution, Drainage and Sewerage Systems (3.0); 3 cr. Water demand and pipeline, components of piped systems, pipe material, bedding and laying, hydraulics flow in pressurized networks, water transportation and distribution systems, storm water drainage systems and foul sewerage systems. Operation and maintenance of piped systems. Design tools using computer models.

CEN 669 Environmental Impact Assessment (3.0); 3 cr. Global approach to the Environmental Impact Assessment of projects on the environment. Project evaluation, constraints, limitations, precautions. Introduction to mitigation processes, legal measures, methodologies, investigation techniques, in-situ surveillance.

CEN 684 Building: Energy and Environment (3.0); 3 cr. Energy efficiency and environmental quality, analyses of various utility rate structures, life cycle cost and techniques, renewable and conventional energy sources, dynamics of the envelope, energy audit procedures, effect of operation and maintenance on the energy use. Project.

CEN 685 Risk Engineering (3.0); 3 cr. Analysis of uncertainty in engineering projects and processes including planning, design and construction. Review and application of probabilities, statistics, and decision analysis applications. Variability of loads, environmental concerns; materials properties; prediction and system reliability analysis. Risk analysis and the decision process.

CEN 690 Advanced Project Management (3.0); 3 cr. Presentation of concepts and important issues in managing projects effectively. It includes project selection, planning, negotiation, budgeting, cost estimation, scheduling, resource allocation, control, auditing, and termination.

CEN 691 Six Sigma Techniques and Total Quality Management (3.0); 3 cr. Advanced topics in Engineering Management and Total Quality Management (TQM). Topics such as costs of quality, statistical tools, initiating change, advanced topics, and TQM in practice will be covered in addition to Six Sigma Quality Techniques.

CEN 692 Financial Engineering (3.0); 3 cr. Use of principle and financial economics in engineering. Capital asset pricing, term structure of interest, and other capital allocation models will be covered. Assessment of real-options using binomial lattice, Black-Scholes and other pricing models.

CEN 693 Simulation Modeling (3.0); 3 cr. Principles and methods for discrete-event simulation modeling. Use of simulation in the planning systems. Simulation modeling perspectives and languages, variance reduction methods, model validation, and output testing.

CEN 694 Dynamic Optimization (3.0); 3 cr. Methods including dynamic programming, the calculus of variations, and optimal control theory. Focus is on the modeling and solution of practical problems applying these techniques.

CEN 695 Advanced Construction Planning (3.0); 3 cr. Job planning and management, selection of construction equipment, soil stabilization, tractors, scrapers, excavating equipment, trucks, operation analysis, drilling rock, blasting, tunneling.

CEN 696 Advanced Operations Research (3.0); 3 cr. Review of quantitative methods to gain skills in modeling and decision-making. It includes z-transforms and difference equations, Markov Chains, decision analysis techniques, goal programming, game theory, queuing theory and nonlinear programming.

CEN 697 Decision Analysis (3.0); 3 cr. Review of methods of optimizing decisions. It includes decision models, fuzzy controls, statistical decision theory, formal logic, game theory, stochastic programming, information theory, multi-objective decisions, and qualitative aspects of the decisions.

CEN 698 Special Topics in Engineering Infrastructures (3.0); 3 cr. Presentations of recent issues in Engineering Infrastructure related to a developed project or research. This course complement knowledge by addressing latest techniques and their implementation.

CEN 699 Sustainable Development Planning (3.0); 3 cr. Policy and planning for sustainable development. Sustainability as a method of social, organizational, and political development based on cases from the MENA region. Discussions on ecological enhancement; sustainable technology development, international and intergenerational fair trades, and democratic governance.

CEN 790 Master Thesis; 6 cr. Implementation of a proposal developed with the approval of the advisor. It includes a Thesis report and a final defense in front of a committee.

PETROLEUM ENGINEERING

THE DEGREE OF BACHELOR OF ENGINEERING IN PETROLEUM ENGINEERING

Mission

The Petroleum Engineering program seeks to produce petroleum engineers who use their knowledge and ability to design and construct sustainable petroleum engineering systems, which serve the needs of society and adhere to professional, ethical, and environmental standards. Graduates will understand and be able to apply current knowledge of engineering, environmental, and legal issues to advance sustainable engineering practices. The curriculum shares three basic tenants: scientific and technological excellence, balance between theory and practice, and a commitment to self-maintained and enduring personal and professional development. Petroleum engineering graduates are naturally committed to life-long learning and are problem-solvers ready to deal with any technological challenge at local, regional and/or international scales.

Program Educational Objectives

The program will prepare students to:

- Use appropriate engineering skills and tools to design sustainable projects;
- Have an ethical and professional commitment to the community and its environment; and
- Communicate effectively and professionally in dealing with basic concepts in management, business, and public policy.

Program Learning Outcomes

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Degree Requirements

The Petroleum Engineering program is currently hosted by the Department of Civil and Environmental Engineering and leads to the degree of Bachelor of Engineering in Petroleum Engineering. The course requires a total of 150 credits divided into the following pools:

Liberal Arts Curriculum **27 cr.**

Core Requirements **50 cr.**
CHM 211, CHM 221, CHM 271, CEN 392, EEN 205, EEN 340, ENG 200, ENG 202, ENG 270, GEO 201, MAT 213, MAT 215, MAT 224, MAT 235, MAT 326, MAT 335, MAT 339, PHS 206, PHS 275.

Major Requirements **57 cr.**
CEN 202, CEN 203, CEN 204, MEN 201, MEN 210, MEN 320, MEN 376, PEN 205, PEN 220, PEN 275, PEN 302, PEN 305, PEN 310, PEN 320, PEN 340, PEN 371, PEN 372, PEN 405, PEN 410, PEN 440, PEN 450, PEN 472, PEN 598, PEN 599.

Approved Professional Training **1 cr.**
PEN 489.

Technical Electives **12 cr.**
Choose four courses from the following pool:
PEN 500, PEN 501, PEN 502, PEN 503, PEN 508, PEN 510, PEN 512, PEN 520, PEN 525, PEN 540, PEN 561, PEN 581.

Free Electives **3 cr.**
Include any course, of sophomore level (200-level) or above, offered by the University.

Undergraduate Courses: Petroleum Engineering

PEN 205 Reservoir Rock Properties (3.0); 3 cr. Fundamental course establishing primary petrophysical concepts, properties and their measurement. Rock types, distribution, composition and structure, porosity, permeability, resistivity, wettability, water saturation, elastic moduli, and effects of pressure and temperature on rock properties. *Prerequisite:* GEO 201.

PEN 275 Rock Properties Laboratory (0.2); 1 cr. Measurement and analysis of reservoir properties, such as porosity, permeability, fluid saturation, grain size, elastic moduli and pore throat sizes. The course will stress safety concerns appropriate for all laboratory procedures, error analyses and report writing. *Prerequisite:* GEO 201. *Corequisite:* PEN 205.

PEN 220 Petroleum Reservoir Fluids (3.0); 3 cr. Behavior of gases. Phase behavior of liquids. Qualitative and quantitative phase behavior of hydrocarbon systems. Reservoir fluid characteristics. Application of these concepts to the prediction of gas and gas-condensate reservoir behavior. *Prerequisite:* MEN 210.

PEN 302 Fundamentals of Reservoir Engineering (3.0); 3 cr. Fundamentals of evaluation of oil and gas reservoirs. Reservoir volumetrics. Material balance. Darcy's law and equation of continuity. Diffusivity equation. Streamlines. Well models. Introduction to well testing. Decline curve analysis. Natural water influx. *Prerequisites:* PEN 205, PEN 220.

PEN 305 Structural Geology and Stratigraphy for Petroleum Engineers (3.0); 3 cr. Treatment of structural and stratigraphic geology with an emphasis on aspects of importance to petroleum engineering. Investigation of mechanical principles relating to the earth's crust. Descriptive study of nomenclature, causes of tectonic deformation, sedimentary processes and environments, and stratigraphic principles. *Prerequisite:* GEO 201.

PEN 310 Momentum, Heat and Mass Transfer (3.0); 3 cr. The common mathematical and physical basis of these processes is presented. Calculation methods for all three processes. Design procedures of equipment for fluid flow, heat transfer and diffusion processes. *Prerequisite:* MEN 210.

PEN 320 Well Logging and Formation Evaluation (3.0); 3 cr. Basic formation evaluation concepts. Borehole environment. Principles of resistivity, radiation, thermal and elastic wave measurements and measuring tools. Applications to formation evaluation using commercial software package. *Prerequisite:* PEN 205. *Corequisite:* PEN 372.

PEN 340 Drilling and Completions I (3.0); 3 cr. Drilling operations, drilling costs and economics. Drilling fluids, pressure losses in circulating systems, rotary drilling bits and penetration rate. Rotary drilling techniques. Pore and fracture gradients. *Prerequisite:* PEN 205.

PEN 371 Reservoir Fluid Mechanics Laboratory (0.2); 1 cr. Laboratory experiments in hydrocarbon phase behavior, saturation pressure, real fluid properties, relative permeability, secondary recovery by water flooding and gas displacement. Volumetric reserve estimation. Statistical analyses of core data. Two-dimensional flow. Enhanced oil recovery using surfactants and polymers. *Prerequisite:* PEN 302.

PEN 372 Well Logging and Formation Evaluation Laboratory (0.2); 1 cr. Laboratory exercise to stimulate well logging tools measurement and obtain resistivity and formation factor for core plug. Introduction to the state of the art well

logging interpretation software to perform exercises. *Corequisite:* PEN 320.

PEN 405 Geophysics for Petroleum Engineers (3.0); 3 cr. Geosciences concepts and technologies with applications in petroleum engineering: 2D-3D-4D seismic, borehole geophysics, passive seismic, controlled source electromagnetics, geophysical and geological modeling and inversion. *Prerequisites:* PEN 305, EEN 340.

PEN 410 Petroleum Production (3.0); 3 cr. Tubing and packer design. Hydraulic fracturing and acidizing. Oil and gas well performance. Vertical lift and choke performance. Systems analysis. Production operations. *Prerequisite:* PEN 340.

PEN 440 Drilling and Completions II (3.0); 3 cr. Wellbore. Well planning. Casing design. Direction control. Drilling program preparation. Offshore operations. Cost control and AFE. Post-drilling review, and economics. *Prerequisite:* PEN 340.

PEN 450 Petroleum Economics (3.0); 3 cr. Economics of the upstream sector in all its aspects: reserves, players (oil companies, service companies), investments, costs and benchmarking, certainty economics applied to petroleum projects cash flow including taxation, decline curve analysis and oil and gas reserve estimate, application of uncertainty analysis and the use of statistical and probabilistic properties of reservoir description, standard methods of investment analysis when risk has to be coped with. *Prerequisites:* CEN 392.

PEN 472 Drilling and Production Engineering Laboratory (0.2); 1 cr. Properties of drilling and completion fluids. Well control. Oil and gas well testing. Production operations. Evaluation of artificial lift systems. Gas measurement. *Corequisite:* PEN 410.

PEN 489 Approved Professional Training (0.0); 1 cr. Two-month-training in a petroleum engineering environment in which the student is exposed to different aspects of petroleum engineering practice and equipment: design, construction, testing, maintenance, etc. *Prerequisite:* Department approval.

PEN 500 Storage and Transportation of Petroleum Fluids (3.0); 3 cr. Methods of crude oil and gas transportation, types of storage tanks and pressure vessels, design and selection of storage tanks according to API standards, maintenance of storage tanks. *Prerequisite:* PEN 410.

PEN 501 Offshore Technology (3.0); 3 cr. Introduction to offshore operations, procedure for the design and construction of the equipment and facilities of offshore operations, selection of offshore equipment. *Prerequisite:* PEN 440.

PEN 502 Advanced Reservoir Engineering (3.0); 3 cr. Advanced reservoir engineering concepts required for effective production of oil and gas. Reservoir characterization. Reservoir heterogeneity and anisotropy. Recovery mechanisms. Leverett J-functions. Upscaling. Flow simulation. History matching and forecasting. Uncertainty and risk. *Prerequisite:* PEN 302.

PEN 503 Reservoir Modeling (3.0); 3 cr. Development of the general material balance equation, solution of PDE using numerical methods, prediction of reservoir performance. *Prerequisite:* PEN 302.

PEN 508 Natural Gas Processing (3.0); 3 cr. Gas conditioning. Processing of gas for its fluids. Design of adsorption and absorption facilities. Fractionation design. *Prerequisite:* PEN 410.

PEN 510 Thermodynamics of Petroleum Fluids (3.0); 3 cr. Chemical thermodynamics and its applications to the behavior of reservoir fluids, with emphasis on phase behavior of multi-component mixtures. *Prerequisite:* PEN 310.

PEN 512 Separation Processes (3.0); 3 cr. Separation processes applied to petroleum fluids. Equilibrium-based processes with staging and continuous contacting, distillation, evaporation, liquid-liquid extraction, leaching. Introduction to membrane based separations. *Prerequisite:* Department approval.

PEN 520 Well Test Analysis (3.0); 3 cr. Diffusivity equation. Exponential integral solution. Principle of superposition. Draw-down testing. Skin effects. Wellbore storage. Type curve matching. Reservoir limit test. Buildup testing. Bounded reservoirs. Average reservoir pressure. Drill stem testing. Interference testing. Pulse testing. Reservoir Heterogeneities. Anisotropy. Stratification. Sealing faults. *Prerequisites:* PEN 302, PEN 320.

PEN 525 Improved Recovery Techniques (3.0); 3 cr. New wellbore and reservoir techniques for improved recovery. Feasibility analysis. Diagnostic techniques. Single well operations. Infill drilling. Horizontal wells and multilaterals. Water flooding. Enhanced oil recovery. *Prerequisite:* PEN 410.

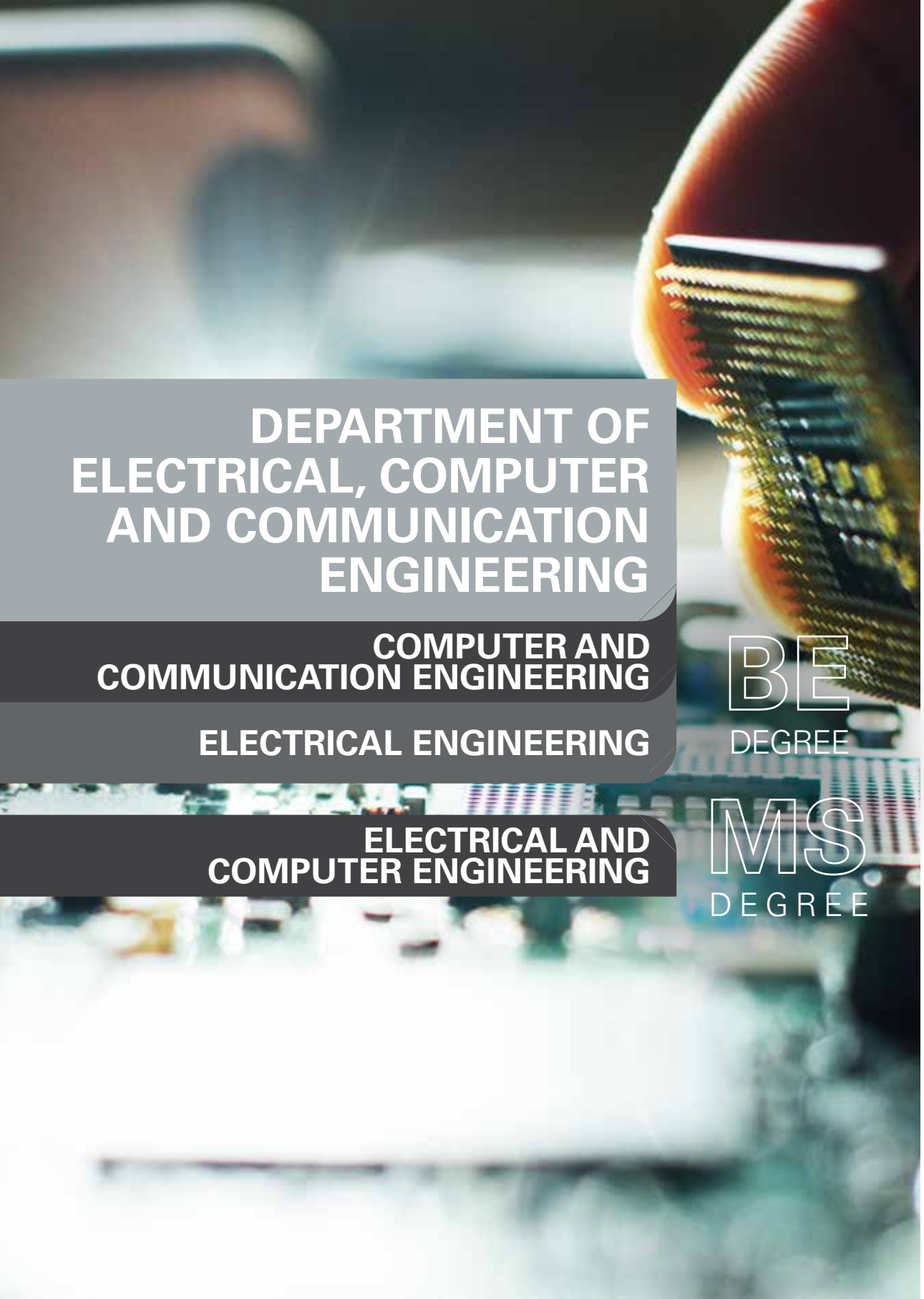
PEN 540 Pollution Prevention and Control Energy Industry (3.0); 3 cr. Overview of environmental laws and regulations. Environmental standards for air quality, water and land. Regulatory approval process for new energy projects. Base-line Study and environmental impact assessment. Environmental review of new energy projects. Pollution prevention methodology and techniques. Separation and recycle streams. Process modification, integration, analysis and control. Risk assessment. *Prerequisite:* Department approval.

PEN 561 Surface Production Operations (3.0); 3 cr. Oil and gas treating process equipment, design and operation. Two-phase and three-phase separators. Heater treaters. Fluid gathering and distribution systems. Pumps and compressors. Flow measurement and production testing. Natural gas dehydration and sweetening. Produced water treatment and disposal. *Prerequisite:* PEN 310.

PEN 581 Special Topics in Petroleum Engineering (3.0); 3 cr. Material includes coverage of recent developments in petroleum engineering that are needed to update students on the latest technologies. Department determines topics to be covered and *Prerequisites* when offered. *Prerequisite:* Department approval.

PEN 598 Engineering Design I (1.0); 1 cr. Development of a project proposal that includes the following items: Choice of project topic, literature survey, market analysis, feasibility study, project timeline, list of materials and cost, engineering ethics issues, social and environmental impact, etc. *Prerequisite:* Department approval.

PEN 599 Engineering Design II (2.0); 2 cr. Implementation of the engineering design project that was proposed in PEN 598. Includes report, final presentation. *Prerequisite:* PEN 598.



DEPARTMENT OF ELECTRICAL, COMPUTER AND COMMUNICATION ENGINEERING

Professors:	Hamad, Mustapha; Kassem, Abdallah; Nassar, Elias; Semaan, Georges.
Associate Professors:	Atallah, Jad; El Moucary, Chady; Issa, Joseph; Mendalek, Nassar.
Assistant Professor:	Bou-dargham, Nadine
Senior Laboratory Instructors:	El Turkey, Nisrine; Siranossian, Aline; Zakhem, Walid.

Mission
The mission of the Department of Electrical, Computer and Communication Engineering is to provide students with excellent undergraduate engineering education following a liberal arts model of education whilst promoting ethical and spiritual values. The Department is dedicated to endow students with quality knowledge, technical skills, and values that prepare them to excel as engineers and leaders in their profession and to be committed to life-long learning and good citizenship at the local, regional, and international levels.

Department Profile
The Department of Electrical, Computer and Communication Engineering offers two programs a Bachelor of Engineering in Electrical Engineering and a Bachelor of Engineering in Computer and Communication Engineering. A graduate program leading to a Master of Science (MS) in Electrical and Computer Engineering is also offered.

THE DEGREE OF BACHELOR OF ENGINEERING IN COMPUTER AND COMMUNICATION ENGINEERING

Mission

The mission of the Computer and Communication Engineering Program is to provide excellent undergraduate education which includes the theory and practice of balanced topics in computer and communication engineering following the liberal arts education model. Besides promoting ethical and spiritual values and serving the community, graduates are expected to acquire quality knowledge, critical thinking skills, and a sense of civic responsibility in a variety of computer and communication engineering fields through a balance of required courses and technical electives. The program seeks to prepare qualified computer and communication engineering graduates for professional practice or graduate studies at the local, regional and international levels. Graduates are able to work skillfully and effectively in multidisciplinary teams and are competent to engage in life-long learning.

Program Educational Objectives

The program will prepare students to:

- Lead productive careers in a broad range of computer and communication engineering specializations at the local, regional, and international levels;
- Pursue successful graduate studies and engage in life-long learning;
- Practice the engineering profession with critical thinking, ethics, integrity, leadership, and civic responsibility so as to enhance quality of life; and
- Work skillfully and effectively in multidisciplinary teams and contribute to the well-being of society and the environment.

Program Learning Outcomes

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Degree Requirements

The course requirements of the degree of Bachelor of Engineering in Computer and Communication Engineering involve a total of 150 credits divided into the following pools:

Liberal Arts Curriculum **27 cr.**

Core Requirements **38 cr.**
ENG 200, ENG 202, ENG 270, MAT 211, MAT 213, MAT 215, MAT 224, MAT 235, MAT 326, MAT 333/MAT 335, MAT 339, CHM 211, CHM 271, PHS 212, PHS 271.

Major Requirements **63 cr.**
CSC 215, CSC 275, CSC 313, CSC 426, EEN 323/CSC 312, EEN 342/CSC 425, EEN 201, EEN 202, EEN 203, EEN 220, EEN 221, EEN 310, EEN 311, EEN 312, EEN 330, EEN 331, EEN 340, EEN 341, EEN 344, EEN 345, EEN 422, EEN 424, EEN 425, EEN 443, EEN 444, EEN 489, EEN 598, EEN 599.

Technical Electives **19 cr.**
Students should complete 19 credits of approved technical electives in EEN and CSC courses including one elective laboratory course.

Computer Science courses (9 credits)
CSC 316, CSC 323, CSC 387, CSC 414, CSC 423, CSC 432, CSC 456.

Computer and Communication Engineering courses (9 credits with not more than 2 courses from the same pool):
Communication and Networking: EEN 445, EEN 542, EEN 548, EEN 549
Computer Hardware: EEN 421, EEN 513, EEN 523, EEN 527
Electromagnetics: EEN 430, EEN 431, EEN 436, EEN 534
Other: EEN 360, EEN 416, EEN 426, EEN 473, EEN 474, EEN 512, EEN 538, EEN 588

Cooperative Professional Training, EEN 589 (6 cr.): Can replace any two 3-credit Technical Elective courses.

Technical Laboratory Courses (1 cr.): EEN 363, EEN 365, EEN 439, EEN 481

Free Elective **3 cr.**
Include any course, of sophomore level (200-level) or above, offered by the University.

ELECTRICAL ENGINEERING

THE DEGREE OF BACHELOR OF ENGINEERING IN ELECTRICAL ENGINEERING

Mission

The mission of the Electrical Engineering program is to provide excellent undergraduate education, which includes the theory and practice of balanced topics in electrical engineering, following the liberal arts education model. Besides promoting ethical and spiritual values and serving the community, graduates are expected to acquire quality knowledge, critical thinking skills, and a sense of civic responsibility in a variety of electrical engineering fields through a balance of required courses and technical electives. The program seeks to prepare qualified electrical engineering graduates for professional practice or graduate studies at the local, regional, and international levels. Graduates are able to work skillfully and effectively in multidisciplinary teams and are competent to engage in life-long learning.

Program Educational Objectives

The program will prepare students to:

- Lead productive careers in a broad range of electrical engineering specializations at the local, regional, and international levels;
- Pursue successful graduate studies and engage in life-long learning;
- Practice the engineering profession with critical thinking, ethics, integrity, leadership, and civic responsibility so as to enhance quality of life; and
- Work skillfully and effectively in multidisciplinary teams and contribute to the well-being of society and the environment.

Program Learning Outcomes

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Degree Requirements

The course requirements of the degree of Bachelor of Engineering in Electrical Engineering involve a total of 150 credits divided into the following pools:

Liberal Arts Curriculum **27 cr.**

Core Requirements **41 cr.**
ENG 200, ENG 202, ENG 270, MEN 215, MAT 211, MAT 213, MAT 215, MAT 224, MAT 235, MAT 326, MAT 339, CHM 211, CHM 271, PHS 206, PHS 212, PHS 271.

Major Requirements **60 cr.**
CSC 215, CSC 275, EEN 323/CSC 312, EEN 201, EEN 202, EEN 203, EEN 220, EEN 221, EEN 310, EEN 311, EEN 312, EEN 330, EEN 331, EEN 340, EEN 341, EEN 344, EEN 350, EEN 352, EEN 355, EEN 360, EEN 365, EEN 424, EEN 452, EEN 457, EEN 489, EEN 598, EEN 599.

Technical Electives **19 cr.**
Students should complete 19credits of approved technical electives in EEN and CSC courses including four elective laboratory courses.

Electrical engineering courses (12 credits with not more than 2 courses from the same pool):
Power and Control: EEN 453, EEN 455, EEN 461, EEN 553, EEN 557
Electromagnetics: EEN 430, EEN 431, EEN 436, EEN 534
Electronics and Biomedical: EEN 416, EEN 421, EEN 422, EEN 426, EEN 480, EEN 512, EEN 513, EEN 527, EEN 538, EEN 588
Communications & Networking: EEN 342/CSC 425, EEN 443, EEN 445, EEN 548.

One CSC course (3 credits): CSC 313, CSC 316, CSC 387, CSC 426 or any course from the above pools

Cooperative Professional Training, EEN 589 (6 cr.): Can replace any two 3-credit technical elective courses.

Laboratory courses (4 cr.): EEN 356, EEN 363, EEN 425, EEN 439, EEN 444, EEN 456, EEN 462, EEN 481.

Free Elective **3 cr.**
Include any course, of sophomore level (200-level) or above, offered by the University.

Undergraduate Courses: Electrical, Computer and Communication Engineering

ENG 200 Introduction to Engineering (2.0); 2 cr. Engineering design: needs, specifications, feasibility, models. System, detailed alternative and optimum design. Reliability and liability. Communication. Patents and copyrights. Ethics. *Corequisite:* ENG 270.

EEN 202 Circuits Analysis II (3.0); 3 cr. Analysis of AC networks. Fourier and Laplace analysis. Frequency domain circuit analysis. Bode plots. Driving point and network transfer functions. Synthesis and design of first and second order linear time invariant circuit systems. Two port networks. One-phase and polyphase networks. *Prerequisites:* EEN 201, ENG 202. *Corequisites:* MAT 235, EEN 203.

EEN 203 Circuits Laboratory (0.2); 1 cr. Introduction to circuit laboratory instruments, Ohm's, Kirchhoff's laws. Mesh, Nodal, Superposition, Thevenin's. RC, RL, RLC networks, operational amplifiers. *Corequisite:* EEN 202.

EEN 205 Electric Circuits (3.0); 3 cr. Fundamentals of electric circuits. Resistive circuit techniques and methods of analysis. Introduction to operational amplifiers. AC network analysis. Sinusoidal frequency response. Transient analysis. AC power and transformers. Polyphase systems. Not open to EE and CCE students. *Corequisite:* MAT 235.

EEN 206 Electronics (3.0); 3 cr. Semiconductor theory. Diodes and applications. Transistor fundamentals. Transistor amplifiers and switches. Operational amplifiers. Digital Logic circuits. Digital Systems. Principles of electromechanics. Introduction to electric machines. Not open to EE and CCE students. *Prerequisite:* EEN 205.

EEN 207 Instrumentation and Circuits Laboratory (0.2); 1 cr. Measuring equipment such as voltmeter, ammeter, ohmmeter, function generator, and oscilloscope. Experiments in circuits, electronics, digital circuits, electronic transducers and machines. Not open to EE and CCE students. *Corequisite:* EEN 206.

EEN 220 Introduction to Logic Design (3.0); 3 cr. Binary and non-binary systems. Boolean algebra. Logic gates. Logic minimization, combinational circuits, sequential circuits, flip-flops, synthesis of synchronous sequential circuits. PLDs (ROM, PLA, PAL). *Prerequisite:* MAT 211. *Corequisite:* EEN 221.

EEN 221 Logic Design Laboratory (0.2); 1 cr. Experiments with basic Logic gates, combinational network design, sequential network design. Designing with counters, registers, decoders, multiplexers, and adders. *Corequisite:* EEN 220.

EEN 310 Electronic Circuits I (3.0); 3 cr. Properties, operation, and biasing of pn junction diodes, bipolar junction and field-effect transistors. Large and small signal models and their applications. Analog signal amplification. Op amp applications. *Prerequisite:* EEN 202.

EEN 311 Electronic Circuits II (3.0); 3 cr. Differential amplifiers. Frequency response of amplifiers. Concepts of feedback. Audio amplifiers. Concept of active filters. *Prerequisite:* EEN 310. *Corequisite:* EEN 312.

EEN 312 Electronic Circuits Laboratory (0.2); 1 cr. Experiments based on EEN 210 and EEN 311. Introduces the practical applications of analog circuits, including transistor and diode circuits, operational amplifiers applications, simple amplifiers, filters, and oscillators. *Prerequisite:* EEN 203. *Corequisite:* EEN 311.

EEN 323 Fundamentals of Computer Hardware (3.0); 3 cr. Basic computer system hardware architecture, implementation, organization, functionality, general feature of MIPS instruction set. Arithmetic floating point operations, performance evaluation using Amdahl's law, pipelining, data and branch

hazards, memory, IO hierarchies. Introduction of the parallel computing architecture in a cloud environment and graphic processing unit (GPU) architecture. *Prerequisite:* EEN 220.

EEN 330 Electromagnetics I (3.0); 3 cr. Sinusoidal steady state and transient analysis of transmission lines. Static electric and magnetic fields. Laplace and Poisson's equations. Resistance, inductance and capacitance. Conductors, dielectrics and magnetic materials. Polarization and magnetization. Electromagnetic devices. Bioelectromagnetics. *Prerequisites:* PHS 212, EEN 202, MAT 235.

EEN 331 Electromagnetics II (3.0); 3 cr. Maxwell's equations. Plane wave propagation reflection and transmission in lossless and lossy media. Normal and oblique incidence. Waveguides. Impedance matching. Electromagnetic effects in high-speed circuits. Computer simulation. *Prerequisite:* EEN 330.

EEN 340 Signals and Systems (3.0); 3 cr. Basic concepts in linear system theory. Analyzing continuous and discrete signals and linear systems. Superposition, convolution and impulse response. Sampling theorem. Spectral analysis. Fourier series and transforms. Laplace transforms. Transfer functions. Bode plots and stability. Discrete-Time Fourier transform. Introduction to z-transforms. *Prerequisites:* EEN 202, MAT 235. *Corequisite:* EEN 341.

EEN 341 Signals and Systems Laboratory (0.2); 1 cr. This course introduces the practical applications of signal processing, including analog signals and systems, sampling, discrete-time signals and systems, convolution, Fourier series, Fourier transform, Z-transform, and applications of the discrete Fourier transform (DFT) in acoustic signal processing, in image processing and in communications. *Corequisite:* EEN 340.

EEN 342 Computer Networks (3.0); 3 cr. An introduction to data networks, wired and wireless networks, direct link networks, Ethernet, ISO reference model, internet protocols, TCP/IP, UDP, traffic engineering, modern networks. *Prerequisite:* EEN 340.

EEN 344 Communication Systems I (3.0); 3 cr. Mathematical analysis and signal processing used in basic communication systems. Spectral analysis. Signal transmission. Amplitude and angle modulations. Frequency-division multiplexing. FM stereo. Pulse modulation. Time-division multiplexing. Impulse radio. Baseband data transmission. Equalization. Digital band-pass modulation techniques. OFDM. Spread spectrum techniques. Applications to digital voice, digital television and data communications. *Prerequisite:* EEN 340.

EEN 345 Computer Network Laboratory (0.2); 1 cr. Design, troubleshooting, modeling, and evaluation of computer networks, network addressing, IP routing, route discovery, TCP and UDP, socket programming, IP fragmentation, and Network simulation. *Prerequisite:* EEN 342/ CSC 425.

EEN 350 Fundamentals of Electric Machines (3.0); 3 cr. Magnetic materials. Fundamental operation of transformers, DC and AC machines. Design considerations of rotating machinery. *Prerequisite:* EEN 202. *Corequisites:* EEN 331, EEN 352.

EEN 352 Fundamental of Electric Machines Laboratory (0.2); 1 cr. Experiments with single phase and three-phase transformers. DC and AC machines. *Corequisite:* EEN 350.

EEN 355 CAD I for Electrical Engineering (0.2); 1 cr. Build and supervise electrical installations drawings. Create and modify electrical controls systems. Create intelligent panel layout drawings. Use the tagging and linking panel components. Generate a bill of material (BOM) report. *Prerequisite:* EEN 312.

EEN 356 CAD II for Electrical Engineering (0.2); 1 cr. Design of control circuits and panel boards using AutoCAD electrical version. Load sharing using PLC modules, protection devices. Coordination between panel boards components and power sources as transformers and generators. *Prerequisite:* EEN 355.

EEN 360 Modern Control Systems (3.0); 3 cr. Mathematical models for control systems. State variables and transfer functions representations. System performance and design criteria. Stability, sensitivity, time response of linear control systems. Use of Hurwitz, root-locus, Nyquist and Bode methods for analysis and synthesis of linear systems. *Prerequisite:* EEN 340.

EEN 363 Instrumentation Laboratory (0.2); 1 cr. Input and output transducers. Position, temperature, light intensity, force, speed and sound measurements and display. Introduction to PCB design techniques. Design project. *Prerequisite:* EEN 312.

EEN 365 Programmable Logic Control Laboratory (0.2); 1 cr. Programmable control applications. Advanced PLC control techniques using pneumatic sequencer. Control of an automation system. *Prerequisite:* EEN 424.

EEN 416 Principles of Semiconductor Devices (3.0); 3 cr. Fundamentals of the physical properties of semiconductors. Doping. Fermi-Dirac statistics. Generation-recombination properties of excess carriers in semiconductors. Optical absorption and luminescence. Carrier drift and diffusion. Properties of the p-n junction under forward and reverse bias. Characteristics of semiconductor devices, and advanced device issues relevant to state-of-the-art integrated-circuit technologies. *Prerequisites:* PHS 213, EEN 331.

EEN 421 Introduction to VLSI Design (3.0); 3 cr. Large-scale MOS Design. Topics: MOS transistors, static and dynamic MOS gates, MOS circuit fabrication, design rules, resistance and capacitance extraction, power and delay estimation, scaling, MOS combinational and sequential logic design, registers and clocking schemes, memory and data-path. Elements of computer-aided circuit analysis, synthesis, and layout techniques. *Prerequisite:* EEN 322.

EEN 422 Digital Integrated Circuits (3.0); 3 cr. CMOS devices and manufacturing technology. CMOS digital logic circuits. Propagation delay, noise margins, and power dissipation. Technology scaling and the impact of interconnect. Advanced MOSFET and BiCMOS circuits. Memory circuits. Signal generators and Oscillators. A/D and D/A conversion techniques. *Prerequisites:* EEN 220, EEN 311.

EEN 424 Microprocessor System Design (3.0); 3 cr. Microprocessor internal architecture. RISC/CISC Processors, Registers, Memory organization. Instructions, execution and timing. Interfacing with peripherals. Static and Dynamic Interrupts. Designing and Interfacing with state of the art microprocessors. Assembly language programming. Hardware Description Language (HDL) will be used for homework assignments and projects. *Prerequisites:* EEN 310, EEN 323/CSC 312. *Corequisite:* EEN 425.

EEN 425 Microprocessor Laboratory (0.2); 1 cr. Experiments and design project related to the course EEN 424. *Prerequisite:* EEN 221. *Corequisite:* EEN 424.

EEN 426 Biomedical Engineering (3.0); 3 cr. Design consideration for clinical and health care devices. Design of biomedical devices. Involves analog, digital and microprocessor/microcontroller-based designs. Design of monitoring devices. *Prerequisites:* EEN 311, EEN 424.

EEN 430 Antenna Design for Wireless Communications (3.0); 3 cr. Fundamentals of radiation from antennas. Wire antennas such as monopole, dipole and loop antennas. Aperture antennas such horn and reflector antennas. Wideband antennas. Antenna arrays. Application to cellular systems. Course includes design project. *Prerequisite:* EEN 331.

EEN 431 Microwave Circuit Design (3.0); 3 cr. Coverage of passive and active microwave devices including transformers, couplers, resonators, circulators, oscillators and amplifiers. Course includes project consisting of computer-aided design of a microwave circuit. *Prerequisites:* EEN 311, EEN 331.

EEN 436 Fiber Optics (3.0); 3 cr. Ray optics and wave optics. Design optimization of fibers for optical data transmission. Fiber fabrication. Signal

degradation in optical fibers. Fiber connections and diagnostics. *Prerequisite:* EEN 331.

EEN 439 Electromagnetics Laboratory (0.2); 1 cr. Properties of magnetic materials. Electromagnetic devices. Transmission lines. Impedance matching. Antennas and microwave circuits. Includes design project and computer simulations. *Prerequisite:* EEN 331.

EEN 443 Communication Systems II (3.0); 3 cr. Random signals and noise. Noise in analog communications. Noise in digital communications. Error detection and correction. System and noise calculations. Electrical noise. Noise figure. Cascade connection of two-port networks. Free-space link calculations. Terrestrial mobile radio. Spread spectrum techniques, CDMA. Turbo codes and Trellis Coded Modulation (TCM). *Prerequisites:* EEN 344, MAT 326. *Corequisite:* EEN 444.

EEN 444 Communication Systems Laboratory (0.2); 1 cr. Introduction to Amplitude Modulation. Fault detection in DSB and SSB systems, FM modulators and demodulators. Analog to Digital conversion A/D, Digital to Analog conversion D/A, Encoding/ Decoding. Pulse Modulation, PAM, PPM, PDM. Coherent detection of signal in noise. Frequency Shift Keying (FSK). *Corequisite:* EEN 443.

EEN 445 Wireless Sensor Networks (3.0); 3cr. Fundamental concepts and building blocks of Wireless Sensor Network (WSN) design. Overview of WSN wireless technologies, components, challenges and applications. Comparison between WSN, ad-hoc networks and IoT. WSN basic architecture, communication models and protocols. QoS and network management techniques, topology control, power management, synchronization, localization and data handling in WSN. Case studies of deployed WSN. *Prerequisites:* EEN 331, EEN 342.

EEN 452 Fundamentals of Power Engineering (3.0); 3 cr. Power system components. Basic principles of electrical power systems. Generator and transformer models, steady-state characteristics and the per-unit system. Overhead transmission line parameters, capacitance and inductance. Transmission line model, performance and line compensation. Power flow analysis. Balanced Fault. Symmetrical components and unbalanced fault. *Prerequisite:* EEN 350.

EEN 453 Electric Drives (3.0); 3 cr. Introduction to elements of drive systems, characterization of mechanical loads, requirements of electric drive systems, dc drives with various power electronics based conversion sources, dynamic equations and closed loop control of dc drives, induction motor drives, ac controller, slip-energy recovery, volts/Hz control, synchronous motor drives, permanent magnet motors, reluctance motors. *Prerequisites:* EEN 210, EEN 350.

EEN 455 Power Electronics (3.0); 3 cr. Switching power supplies. AC power controllers. Controlled rectifiers. DC choppers and DC-AC converters. Bridge structure inverters. *Prerequisites:* EEN 310, EEN 350.

EEN 456 Power Electronics Laboratory (0.2); 1 cr. Experiments based on EEN 455. *Corequisite:* EEN 455.

EEN 457 Industrial Electrification (3.0); 3 cr. Lighting design for residential and industrial facilities. Emphasis on latest lighting technologies. Cable types and sizing. Motor control centers. Includes design project. *Prerequisite:* EEN 350.

EEN 461 Digital Control (3.0); 3 cr. Sampling and data reconstruction in computer control systems. Z-transforms and state equations to describe discrete and mixed data systems. Analysis of digital feedback systems using frequency domain techniques and state space techniques.Non-linear digital feedback systems. *Prerequisite:* EEN 360.

EEN 462 Control Systems Laboratory (0.2); 1 cr. Laboratory based on EEN 360. Analog and digital control systems, PID control, PLC systems. *Prerequisite:* EEN 360.

EEN 473 Special Topics in Electrical Engineering (3.0); 3 cr. Material includes coverage of recent developments in Electrical Engineering that are needed to update students on the latest technologies. Department determines topics to be covered and prerequisites when offered. Open to EE and CCE students.

EEN 474 Cloud Computing (3.0); 3 cr. fundamentals of the emerging cloud computing paradigm and its enabling technologies. parallel and distributed computing. advantages and disadvantages. how the cloud is organized, provisioned and programmed. computer systems constraints, tradeoffs and techniques in setting up and using the cloud to best serve the computing needs for different types of data and applications. *Prerequisite:* EEN 323/ CSC 312.

EEN 480 Discrete-Time Signal Processing (3.0); 3 cr. Fundamental concepts of discrete-time signals and systems. Digital signal processing of discrete signals. Sampling theory and reconstruction. Discrete Fourier transforms and analysis of digital filters in the frequency domain. Z-transforms, causality and stability. State-space equations. Design and analysis of FIR and IIR digital filters. Windowing. Bilinear transformation. Filter structures. *Prerequisite:* EEN 340.

EEN 481 Signal Processing Laboratory (0.2); 1 cr. Digital filtering techniques. Architectural feature of single-chip DSP processors. Design project. *Prerequisite:* EEN 480.

EEN 489 Approved Professional Training (0.0); 1 cr. Department approved practice in industry in one of the areas of Electrical, Computer and Communication Engineering. A report is required. *Prerequisite:* Department approval.

EEN 512 Mixed-Signal Electronics (3.0); 3 cr. Comparators. Sample-and-hold and translinear circuits. Discrete-time signals. Switched-capacitor circuits. Data converter fundamentals. Nyquist-rate D/A converters. Nyquist-rate A/D converters. *Prerequisite:* EEN 311.

EEN 513 RF PCB Design (3.0); 3cr. RF printed circuit technology drivers. PCB materials. PCB layer stackup. Via structures. Edge plating. Cavity constructions. Thermal management. Grounding and shielding. Recycling. PCB design. *Prerequisites:* EEN 311, EEN 331.

EEN 523 Advanced Computer Hardware (3.0); 3 cr. Architecture of modern computers systems including CPU, memory, pipelines, multicores and multiprocessors. The emphasis is on analyzing major system components with impact on performance such as: pipelining, instructional and thread level parallelism, I/O devices, memory hierarchy and cache, branch prediction methods, speculations for data and branch predictions. Different multithreading implementations, virtual machines, UMA, NUMA and COMA, memory architectures in shared multiprocessor and single processors, and cache coherence issues. *Prerequisite:* EEN 323/CSC 312.

EEN 527 Embedded Systems Design (3.0); 3 cr. Designing and implementing embedded systems on SoC-FPGA boards (Xilinx, Intel, …) using CAD tools. *Prerequisite:* EEN 424.

EEN 534 Radar Systems and Remote Sensing (3.0); 3 cr. Operation of a radar system including antennas, circuitry and wave propagation; remote sensing and mapping of the earth; ground penetrating radar, intelligent vehicle highway system; aircraft navigation. *Prerequisites:* EEN 331, EEN 340.

EEN 538 RF Electronics (3.0); 3 cr. Low-noise amplifiers and mixers. Passive devices. Oscillators. Phase-locked loops and frequency synthesizers. Power amplifiers. RF simulation. *Prerequisite:* EEN 311.

EEN 542 Advanced Computer Networks (3.0); 3 cr. Architecture, components and operations of routers and switches. WAN technologies and network services required by converged applications in the context of a large complex network. Configuration of routers and switches for advanced functionality as well as troubleshooting these devices with

the objective of resolving common issues with OSPF, EIGRP, STP and VTP in both IPv4 and IPv6. A Selection criteria of network devices and WAN technologies to meet network requirements as well as the configuration and troubleshooting of these devices with the objective of resolving common issues at the data link layer. *Prerequisite*: EEN 345.

EEN 548 Wireless Communications (3.0); 3 cr. Introduction to wireless systems and cellular principles, modulation techniques for mobile radio, speech and channel coding, multiple access techniques, applications to wireless systems. *Prerequisites:* EEN 331, EEN 443.

EEN 549 Modelling and Analysis of Telecommunication Networks (3.0); 3 cr. Stochastic analysis tools and simulation techniques. Evaluating the performance of modern telecommunications networks in terms of fundamental quality of service metrics such as offered load, response time, service time, waiting time, utilization, loss rates, achievable throughput. Markovian queueing systems, embedded Markov chains and general service queueing systems. Applications to modern telecommunications networks, pseudo-random number generation. Estimation techniques. Simulation design and models verification and validation. *Prerequisite:* EEN 342/CSC 425. *Corequisite:* EEN 443.

EEN 553 Power System Analysis (3.0); 3 cr. Optimal dispatch of generation. Synchronous machine transient analysis. Balanced and unbalanced short-circuits, balanced three-phase fault and systematic fault analysis. Symmetrical components and unbalanced faults. Transient stability and numerical solution of the swing equation. Power system control. *Prerequisite:* EEN 452.

EEN 557 Renewable Energy Resources and Smart Grid (3.0); 3 cr. Overview of renewable energy resources: key figures, energy extraction, global installed capacity and current trends. Wind turbine generating systems: energy conversion process, rotor power coefficient and Betz limit, power curve, wind generators, statistics and resources, environmental impact and economics. Photovoltaic energy systems: types and applications, main components, peak-power trackers, estimation of energy production, module/ inverter selection, voltage drop and wiring as per NEC. Fundamentals of smart grids: architecture, innovative monitoring solutions and sensing devices, demand response and management systems. *Prerequisite:* EEN 350.

EEN 588 Machine Vision (3.0) 3 cr. Pinhole cameras, radiometry. Local Shading models; point, line, and area sources photometric stereo, color – physics. Human perception, color spaces. camera models and their calibration. Linear Filters, texture as statistics of filter outputs. Texture synthesis. Multi-view geometry, stereo cameras. Segmentation, neural network classification. Tracking. *Prerequisite:* EEN 340.

EEN 589 Cooperative Professional Experience (6.0); 6 cr. This course gives students an opportunity to apply and extend academic knowledge while employed with qualified employers. A final report is required *Prerequisite:* Department approval.

EEN 598 Engineering Design I (1.0); 1 cr. The objective of this course is to develop a project proposal that includes the following items: Choice of project topic, literature survey, market analysis, feasibility study, project timeline, list of materials and cost, engineering ethics issues, social and environmental impact, etc. *Prerequisite:* ENL 230 or ENL 223 or ENL 231, Department approval.

EEN 599 Engineering Design II (2.0); 2 cr. Implementation of the engineering design project that was proposed in EEN 598. Includes report, final presentation. *Prerequisite:* EEN 598.

ELECTRICAL AND COMPUTER ENGINEERING

THE DEGREE OF MASTER OF SCIENCE IN ELECTRICAL AND COMPUTER ENGINEERING

Program Objectives

The program will prepare students to:

- Apply advanced engineering training in a broad range of electrical specializations.
- Strengthen expertise for practicing engineers.
- Prepare students to pursue doctoral programs in Electrical and Computer Engineering or any related field.
- Expand academic knowledge and analytical skills.
- Integrate undergraduate fundamentals and advanced knowledge to solve multifaceted electrical and computer engineering problems.

Admission Requirements

Admission to the MS in Electrical and Computer Engineering program is subject to the University graduate admission requirements, as stated in this Catalog under "Graduate Admission." In addition, the following requirements are to be met:

- Bachelor of Engineering degree in Electrical/Computer Engineering or its equivalent from a recognized university (holders of BS degrees in Engineering will have to take a set of remedial courses to be specified on a case-by-case basis to meet the total number of credits required);
- Cumulative GPA of 3.0 minimum (or its equivalent from a recognized faculty of engineering);
- GRE Scores; and
- Approval of the Faculty Graduate Committee.

Furthermore, applicants should be able to demonstrate proficiency in the English language. All English requirements, as stated in this Catalog under "Graduate Admission", are to be fulfilled.

Graduation Requirements

The program leads to the degree of Master of Science in Electrical and Computer Engineering awarded once the following requirements are met:

- The candidate must complete a total of 30 credits with a minimum cumulative GPA of 3.0/4.0. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 Cs per program. Failed courses may be repeated once provided that the grade on the failed course is equal to "D" or higher. Failing a course with an "F" grade means an automatic exclusion from the program;
- Holders of a Bachelor of Engineering in Electrical/Computer Engineering (5-year program leading to the degree of BE) from a recognized university may apply to transfer a maximum of 18 credits from their undergraduate upper level major elective courses. Only courses with a "B" grade can be considered for transfer;
- The candidate must attend a series of 0-carrying credit seminars, as recommended by the Faculty Graduate Committee. Course grading is based on attendance and is pass or fail; and
- The residency requirements and maximum load per semester are as per University rules and regulations for graduate programs.

Course Requirements:

Mandatory Course (3 cr.):

One graduate course related to advanced mathematics, approved by the Faculty Graduate Committee, is required to start the master's program.

Thesis and Seminar Courses (6 cr.):

EEN 780, EEN 790.

Electives (21 cr.):

Area 1: Integrated Circuits and Computer Systems

EEN 611, EEN 612, EEN 613, EEN 620, EEN 621, EEN 622, EEN 623, EEN 624, EEN 627, EEN 722, EEN 729.

Area 2: Electromagnetics and RF Systems

EEN 630, EEN 631, EEN 632, EEN 634, EEN 635, EEN 636, EEN 637, EEN 638.

Area 3: Communications and Signal Processing

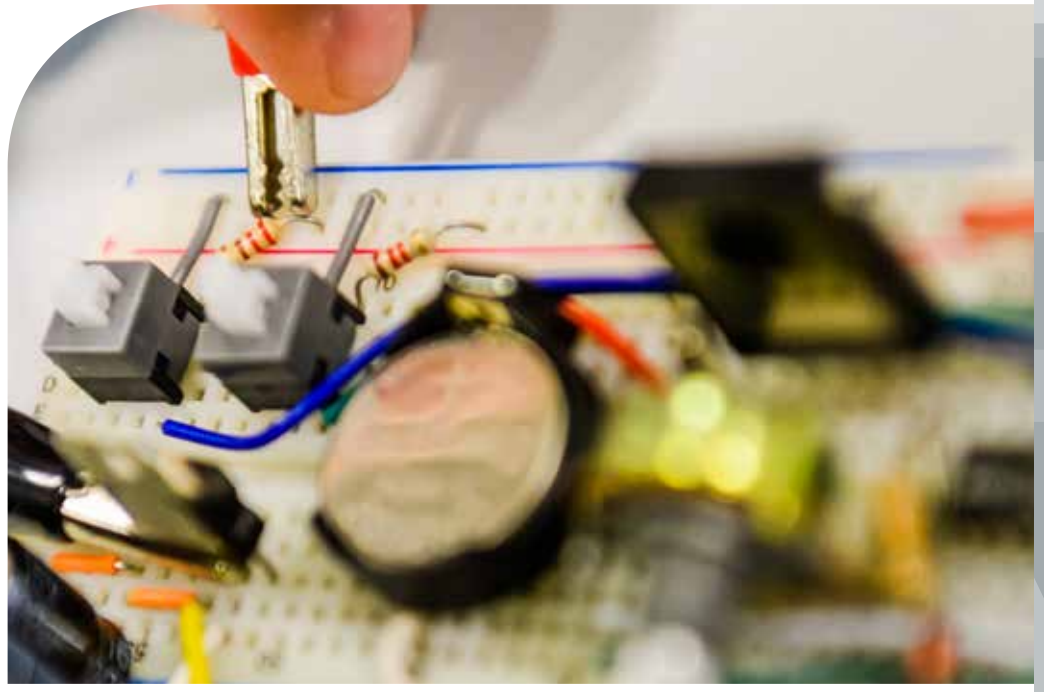
EEN 645, EEN 646, EEN 647, EEN 648, EEN 680, EEN 685, EEN 743, EEN 783.

Area 4: Power and Control Systems

EEN 650, EEN 651, EEN 652, EEN 653, EEN 654, EEN 655, EEN 656, EEN 657, EEN 658, EEN 660, EEN 661, EEN 662, EEN 663, EEN 664, EEN 665, EEN 666, EEN 667, EEN 668.

Area 5: Renewable Energy

EEN 652, EEN 654, EEN 661, EEN 665, EEN 752.



Graduate Courses: Electrical and Computer Engineering

EEN 611 Integrated Circuit Fabrication Processes (3.0); 3 cr. Fundamental principles of integrated circuit fabrication processes; physical and chemical models for crystal growth, oxidation; ion implantation, etching, deposition, lithography, and back-end processing.

EEN 612 Low Power Analog and Mixed-Signal Integrated Circuits (3.0); 3 cr. Devices and noise. Current mirrors. Operational amplifiers. Comparators. Sample and hold circuits. Voltage references. Continuous-time filters. Switched-capacitor circuits. Data converter fundamentals. Nyquist digital to analog converters. Nyquist analog-to-digital converters. Oversampling converters. Phase-locked loops.

EEN 613 Electronic System Packaging and PCB Design (3.0); 3 cr. Introduction to System-on-Package (SOP) technology. Introduction to System-on-Chip (SOC). Stacked ICs and Packages (SIP). Mixed-Signal (SOP) design. Radio Frequency System-on-Package (RF SOP). Printed circuit technology drivers. PCB materials. PCB engineering and design.

EEN 620 Advanced Microprocessor System Design (3.0); 3 cr. Architectures of 32/64-bit RISC processors. Performance and architectural limitations of RISC and CISC microprocessors (Intel, Motorola, ARM, etc.). Address/instruction pipelines, burst cycles, memory caching and cache coherency issues, register renaming, and microprocessor interfaces.

EEN 621 VLSI Design (3.0); 3 cr. Static and dynamic CMOS gates, CMOS circuit fabrication, design rules, resistance and capacitance extraction, power and delay estimation, scaling, MOS combinational and sequential logic design, registers and clocking schemes, memory and data-path; elements of computer-aided circuit analysis, synthesis, and layout techniques.

EEN 622 Testing and Fault Tolerance of Digital Systems (3.0); 3 cr. Testing of computer systems and designing for testability. Failure and fault models. Fault coverage, test vectors and test generation. Ad-hoc testing, built-in self-test, IDDQ testing. Basic considerations in the design of reliable computing systems. Redundancy and evaluation methods.

EEN 623 Advanced Computer Architecture (3.0); 3 cr. Performance evaluation; Instruction set design; including data speculation, performance synchronization methods, advanced instruction level parallelism, pipelining, branch prediction; memory hierarchy, cache memory, virtual memory, and virtual memory; I/O interface devices, specification, and modeling pipelining, caches, virtual memory, and multiprocessors.

EEN 624 Embedded Systems Design (3.0); 3 cr. Embedded hardware and software design; Design specification, hardware/software co-design, co-verification, testing; embedded computing platforms, systems-on-a-chip, intellectual property (IP) core design, embedded networks; software design tools and technologies using CAD tools, compilers, and assemblers; hardware design tools, hardware-description languages, high-level synthesis tools, ASIC and FPGA design flows; and real-time operating systems.

EEN 627 Optoelectronic Devices (3.0); 3 cr. Principles of light-emitting diodes (LEDs), lasers, and photodetectors; population inversion at a junction; generation of coherent radiation; heterojunctions, quantum-well LEDs and lasers, and vertical cavity surface-emitting lasers (VCSELs); PIN and avalanche photodiodes; photonic fabrication and packaging.

EEN 630 Antenna Design for Wireless Communications (3.0); 3 cr. Fundamentals of radiation from antennas; wire antennas such as monopole, dipole and loop antennas; aperture antennas such horn and reflector antennas; wideband antennas; antenna arrays; application to cellular systems.

EEN 631 Microwave Circuit Design (3.0); 3 cr. Passive and active microwave devices including transformers, couplers, resonators, circulators, oscillators and amplifiers; computer-aided design of microwave circuits.

EEN 632 Numerical Methods for Wireless Propagation (3.0); 3 cr. Basic coverage of the main numerical techniques in electromagnetics: Finite Difference Time Domain (FDTD) and Finite Element (FE) methods; simulation of radiation and propagation of waves in a wireless communication environment.

EEN 634 Radar Systems and Remote Sensing (3.0); 3 cr. Operation of a radar system including antennas, circuitry and wave propagation; remote sensing and mapping of the earth; ground penetrating radar, intelligent vehicle highway system; aircraft navigation.

EEN 635 Electromagnetic Compatibility (3.0); 3 cr. Fundamentals of Electromagnetic Compatibility (EMC): regulations, grounding, shielding and cross talk; modeling and reduction techniques of noise and interference phenomena in electrical circuits; effect of radiation on the human body; design of electronic devices to minimize undesired radiation and susceptibility to electromagnetic emissions.

EEN 636 Electromagnetic Field Theory (3.0); 3 cr. Separable guided wave and scattering boundary value problems; one-dimensional Green's functions with applications; multi-conductor transmission lines. Multi-dimensional potential Green's functions. Integral equation formulation. Use of asymptotic methods to obtain high-frequency solutions; geometrical optics and the propagation through inhomogeneous media; geometrical theory of diffraction and its application to antenna and scattering problems.

EEN 637 Antenna Theory and Design (3.0); 3 cr. Aperture antennas; ground plane effects; horn and reflector antennas; pattern synthesis; Smart antennas; antenna measurements in anechoic chamber.

EEN 638 RF Transceiver Design (3.0); 3 cr. Basic concepts in RF design. Modulation and detection. Multiple access techniques and wireless standards. Transceiver architectures. Low-noise amplifiers and mixers. Oscillators. Frequency synthesizers. Power amplifiers. Filters. Communication system design and propagation. Radio frequency simulation. Application to the latest wireless standards.

EEN 645 Optical Communication (3.0); 3 cr. Fundamentals of fiber optic communication systems; principles of light propagation in slab and cylindrical waveguides; signal multiplexing techniques used in optical transmission; signal degradation in optical fibers; noise and detection; optical sources, detectors, and amplifiers; optical link design.

EEN 646 Algebraic Coding and Information Theory (3.0); 3 cr. Information theory and its relation to statistics; Kolmogorov complexity, entropy and inference; Shannon theory of communication; source coding for noisy channels; capacity theorems for multiple user channels.

EEN 647 Statistical Communication Theory (3.0); 3 cr. Concepts of probability and random process theory necessary for advanced study of communications; stochastic control; detection and estimation problems.

EEN 648 Wireless Communications (3.0); 3 cr. Wireless systems and cellular principles, modulation techniques for mobile radio, speech and channel coding, multiple access techniques; applications to wireless systems.

EEN 650 Power System Stability and Control (3.0); 3 cr. Static and dynamic power system stability problems; transient stability; small-signal stability, eigenvalue analysis, power system stabilizer, wide area measurements; relaying and system protection; computational techniques for power system stability and control system operation.

EEN 651 Power System Security (3.0); 3 cr. Power system modeling and analysis, conditions for secure operation; mathematical programming techniques for system operation, state estimation, unit commitment, optimal power flow, economic load dispatch, security dispatch; heuristic methods.

EEN 652 Sustainable Power Generation (3.0); 3 cr. Solar, wind, hydro, tidal, biomass, geo-thermal, and wave power generation; storage technologies and energy conversion, characteristics and limitations; distributed generation, technical challenges and opportunities, connection in distribution grids; environmental aspects of electricity generation.

EEN 653 Power System Analysis (3.0); 3 cr. Optimal dispatch of generation. Synchronous machine transient analysis. Balanced and unbalanced short-circuits, balanced three-phase fault and systematic fault analysis. Symmetrical components and unbalanced faults. Transient stability and numerical solution of the swing equation. Power system control.

EEN 654 Electric Drives (3.0); 3 cr. Elements of drive systems, characterization of mechanical loads, requirements of electric drive systems, dc drives with various power electronics based conversion sources, dynamic equations and closed loop control of dc drives, induction motor drives, ac controller, slip-energy recovery, volts/Hz control, synchronous motor drives, permanent magnet motors, reluctance motors.

EEN 655 Energy Markets (3.0); 3 cr. Operation of electricity markets, economic procedures, and emissions trading; restructuring and deregulation in generation, transmission and distribution; pool, bilateral, and imbalance market mechanisms; transmission congestion and demand side management; models for analyzing the impact of risk and uncertainty, risk management techniques.

EEN 656 Power System Planning and Reliability (3.0); 3 cr. Planning and reliability of power systems, load forecasting, load duration curves, loss of load expectation; Generation, transmission and distribution system reliability; factors affecting power system planning and expansion; system adequacy, security, and ancillary services; reliability in electricity markets.

EEN 657 Selected Topics in Power and Control (3.0); 3 cr. Current issues in areas relevant to state of arts in renewable energy and related fields. Department determines topics to be covered and prerequisites when it is offered.

EEN 658 Flexible AC Transmission Systems (3.0); 3 cr. Operating principles of controllers of flexible AC transmission systems (FACTS); active and passive harmonics compensation methods; integration of modern power electronics in shunt and series advanced static VAR controllers, phase shifters, and unified power flow controllers (UPFC).

EEN 660 Linear System Theory and Control (3.0); 3 cr. State-space models for analysis and design of linear control systems; canonical realization of transfer functions; state observability and controllability; pole placement; state feedback and asymptotic observers; reduced order observer; direct transfer function design.

EEN 661 Digital Control (3.0); 3 cr. Sampling and data reconstruction in computer control systems; Z-transforms and state equations to describe discrete and mixed data systems; analysis of digital feedback systems using frequency domain techniques and state space techniques; non-linear digital feedback systems.

EEN 662 Advanced Feedback Control Systems (3.0); 3 cr. Principles of analyzing and designing linear feedback control systems; system representations; controller design methods and criteria; robust design; LQG; servo compensators; H-infinity design techniques.

EEN 663 Introduction to Estimation Theory (3.0); 3 cr. Linear dynamic systems with random inputs; least squares estimation, mean-squared estimation, Kalman filtering and applications.

EEN 664 Optimal ControlTheory (3.0); 3 cr. Optimal control by dynamic programming; Pontryagin's maximum principle and variational methods; minimum time, energy, and fuel problems for linear continuous and discrete systems.

EEN 665 Nonlinear Control Systems (3.0); 3 cr. Dynamic formulation of nonlinear systems; Lyaponov stability; phase plane techniques; describing functions; input-output and input-to-state analysis and control; discontinuous and sliding mode control; model reference adaptive control.

EEN 666 Optimization (3.0); 3 cr. Finite dimensional optimization theory and basic optimization algorithms; unconstrained optimization; Newton methods; steepest descent; conjugate gradient; constrained optimization; active set methods; penalty methods; quadratic programming; global optimization; integer programming.

EEN 667 Neural Networks and Fuzzy Logic in Control (3.0); 3 cr. Fundamental methods and techniques of artificial neural networks and fuzzy logic; architecture, circuit implementations, and system identification.

EEN 668 Automation and Robotics (3.0); 3 cr. Fundamental principles of automation and robotics; robotic manipulator kinematics; dynamics and control; components of a robot system; types of robotic manipulators; electronic system components; analog-to-digital conversion, and applications.

EEN 680 Discrete-Time Signal Processing (3.0); 3 cr. Fundamental concepts of discrete-time signals and systems; digital signal processing of discrete signals; sampling theory and reconstruction; discrete Fourier transforms and analysis of digital filters in the frequency domain; Z-transforms, causality and stability; state-space equations; design and analysis of FIR and IIR digital filters; windowing; bilinear transformation; filter structures.

EEN 685 Biomedical Signal Processing (3.0); 3 cr. Analysis of biological signals; random signals; windowing with Fourier transform; z-transform, and wavelet transform; signal processing techniques applied to vital signs signals such as ECG, EEG, and EMG; high resolution CG and signal averaging.

EEN 722 Advanced VLSI Design (3.0); 3 cr. Advanced topics in VLSI design. Layout synthesis and optimization, design-rule checking, and design circuit for testability. VLSI Algorithms, VLSI for communications and signal processing. Interconnect, packaging, sources of noise. VLSI technologies (silicon and GaAs).

EEN 729 Selected Topics in Integrated Circuits (3.0); 3 cr. A course on current issues in areas relevant to state-of-the-art integrated-circuit technologies. Department determines topics to be covered and prerequisite when offered.

EEN 743 Advanced Wireless Communications (3.0); 3 cr. Detection in fading channels, diversity, interference management, capacity of wireless channels, opportunistic communication, spatial multiplexing, space-time coding, overview

of wireless systems (IEEE 802.11n, IEEE 802.16e / WIMAX, 3GPP Long Term Evolution).

EEN 752 Power Electronics for Renewable Energy Systems (3.0); 3 cr. Converter structures for photovoltaic and wind energy systems connected to the grid, issues related to the control of the converters, power quality, reactive power compensation, active power filters, and the use of simulation tools for design and analysis.

EEN 780 Seminar 0 cr. A series of seminars covering state-of-the art topics in electrical engineering. *Prerequisite:* advisor approval.

EEN 783 Advanced Digital Signal Processing (3.0); 3 cr. Advanced techniques in signal processing; multirate signal processing, upsampling and downsampling in the Z-domain; non-stationary signals; frequency-domain adaptive filtering; the correlation matrix; least-squares adaptive algorithms; linear prediction; the wavelet transforms.

EEN 790 Master Thesis 6 cr.

DEPARTMENT OF MECHANICAL ENGINEERING

Professors: Asmar, Ghazi; Bou Mosleh, Charbel; El Hayek, Michel.

Associate Professors: Feghali, Elias; Hage, Ilige.

Assistant Professor: Klaimi, Rachid

Laboratory Instructor: Melki, Sylvie

THE DEGREE OF BACHELOR OF ENGINEERING IN MECHANICAL ENGINEERING

Mission

The Mechanical Engineering program strives to produce mechanical engineers who understand the ethical, social, economic, and environmental context of their profession and who apply their knowledge with judgment and responsibility to develop ways to utilize the materials and forces of nature for the benefit of mankind. The program prepares students to either immediately enter professional practice upon graduation or to pursue graduate studies, without neglecting the requirements for a fruitful life by emphasizing the University model of liberal arts education. The curriculum of the program shares three basic tenants: scientific and technological excellence, balance between theory and practice, and a commitment to self-maintained and enduring personal and professional development. The results are mechanical engineers naturally inclined to life-long learning, and problem-solvers ready to deal with any technological challenge at local, regional, and/or international scales.

Program Educational Objectives

The program will prepare students to:

- Practice professionally in local, regional, and international work environments by appropriately applying mechanical engineering fundamentals and by using state-of-the-art tools within the broad range of the mechanical engineering profession;
- Advance within their profession in a diversified environment with an ethical commitment to society and sustainability; and
- Engage in continuous professional development and quality research activities by either continually learning and improving or pursuing graduate studies.

Program Learning Outcomes

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Degree Requirements

The Department of Mechanical Engineering offers one undergraduate program leading to the degree of Bachelor of Engineering in Mechanical Engineering. The course requires a total of 150 credits divided into the following pools:

Liberal Arts Curriculum **27 cr.**

Core Requirements **42 cr.**
CHM 211, CHM 271, PHS 203, PHS 212, PHS 273, EEN 205, EEN 206, EEN 207, ENG 200, ENG 202, ENG 270, CSC 212, MAT 215, MAT 235, MAT 326, MAT 335, MAT 339.

Major Requirements **64 cr.**
CEN 202, CEN 204, MAT 213, MAT 224, MEN 200, MEN 201, MEN 202, MEN 210, MEN 211, MEN 270, MEN 302, MEN 310, MEN 320, MEN 321, MEN 330, MEN 340, MEN 370, MEN 376, MEN 401, MEN 430, MEN 435, MEN 437, MEN 471, MEN 489, MEN 570, MEN 598, MEN 599.

Technical Electives **12 cr.**
Choose any four (4) courses from the following pool:
MEN 400, MEN 410, MEN 439, MEN 503, MEN 507, MEN 508, MEN 510, MEN 512, MEN 515, MEN 516, MEN 517, MEN 518, MEN 520, MEN 523, MEN 526, MEN 534, MEN 540, MEN 541, MEN 550, MEN 580, MEN 581, MEN 589.

Laboratory Electives **2 cr.**
Choose any two (2) courses from the following pool:
MEN 571, MEN 573, MEN 575, MEN 576, MEN 578.

Free Electives **3 cr.**
Choose any course, of sophomore level (200-level) or above, offered by the University.

Undergraduate Courses: Mechanical Engineering

MEN 200 Science of Materials (3.0); 3 cr. Material microstructures, dislocations, and defects. Alloying and analysis of phase diagrams. Mechanical properties of metals, polymers, and composites. Heat treatment of metals, elastic and plastic behavior of materials, strain hardening, and fracture.

MEN 201 Engineering Mechanics: Dynamics (3.0); 3 cr. Description of force, position, velocity and acceleration in fixed and moving reference frames. Kinematics and kinetics of particles, of collections of particles and of rigid bodies. Energy and momentum concepts. *Prerequisite:* CEN 202.

MEN 202 Mechanics of Materials I (3.0); 3 cr. Equilibrium, force and moment resultants. Stress/strain concepts, generalized Hooke's law, classification of material behavior. Axial loads, torsion of rods and circular bars. Pressure vessels. Bending and shear stresses in beams. Analysis of statically determinate and indeterminate structures. Stress transformation, combined loading. *Prerequisite:* CEN 202.

MEN 210 Thermodynamics I (3.0); 3 cr. Fundamentals of engineering thermodynamics: properties and behavior of pure substances, concepts of work and heat, systems and control volume analyses, first law, second law, entropy and entropy production, introduction to availability, Carnot cycle. *Prerequisite:* PHS 203 or PHS 206 or CEN 201.

MEN 211 Thermodynamics II (3.0); 3 cr. Thermodynamic cycles: steam and gas power systems, refrigeration and heat pump systems. Compressible substances: thermodynamic properties, general thermodynamic relations, virial equations of state. Introduction to psychometrics. Introduction to combustion and equilibrium calculation. *Prerequisite:* MEN 210.

MEN 215 Introduction to Thermal-Fluid Sciences (3.0); 3 cr. Fundamentals of thermal sciences including thermodynamics, fluid flow and heat transfer for non-ME students: properties of pure substances, energy & power, first law of thermodynamics, systems/control volumes, fluid statics, Bernoulli equation, momentum equation, introduction to conduction, convection and radiation heat transfer. *Prerequisite:* MAT 235.

MEN 270 Computer-Aided Design (0.2); 1 cr. Application of existing CAD software to engineering problems: basic concepts of engineering graphics in a computerized environment; Representation of engineering objects; 2D/3D representations, CAD Standards.

MEN 302 Mechanics of Materials II (3.0); 3 cr. Analysis of more complicated problems in stress and strain. Energy methods, torsion of non-circular members. Shear center concept. Curved beams, thick cylinders and rotating disks. Contact stresses. *Prerequisites:* MEN 202, MAT 235.

MEN 310 Heat Transfer (3.0); 3 cr. Mechanisms of heat transfer. Steady and transient conduction: one and multiple dimensions, approximate and exact solution procedure, introduction to numerical methods. Forced and free convection. Applications to heat exchanger design and performance evaluation. Introduction to thermal radiation. *Prerequisite:* MEN 211. *Corequisite:* MEN 321.

MEN 320 Fluid Mechanics I (3.0); 3 cr. Fundamentals of fluid mechanics: fluid properties, fluid statics and kinematics, inviscid flow, potential flow, simple viscous incompressible flow. Flow analyses: control volume analysis, differential analysis, dimensional analysis and similitude. Flow equations: continuity, momentum and energy equations. *Prerequisites:* MEN 210, MAT 235.

MEN 321 Fluid Mechanics II (3.0); 3 cr. Incompressible and compressible flows: laminar/turbulent flows, pipe flow, boundary layers, lift and drag, introduction to turbulence, elementary gas dynamics. Unsteady flow phenomena. Introduction to centrifugal and axial flow machinery: pumps, fans, hydraulic turbines, and torque converters. *Prerequisite:* MEN 320.

MEN 330 Mechanical Vibrations (3.0); 3 cr. Free and forced vibrations for undamped and viscously damped single-degree -of-freedom systems. Conservation of energy approach and Rayleigh's method. Vibration of multi-degree-of-freedom systems, eigenvalue problems and mode shapes. Modal analysis. *Prerequisites:* MEN 201, MEN 202, MAT 235.

MEN 340 Manufacturing Processes (3.0); 3 cr. Fundamentals and technologies used in processing various industrial materials: casting, forging, machining, metal-sheet processing, joining techniques, etc. *Prerequisite:* MEN 200, *Corequisite:* MEN 370.

MEN 370 Graphics for Mechanical Engineers (0.2); 1 cr. Application of the basic concepts of engineering graphics to the representation of mechanical components: shafts, bearings, fasteners, keys, springs, gears, cams, etc.; Assembly drawings; Dimensioning and tolerancing; Standards. CAD tools are to be used throughout the course for representation purposes. *Prerequisite:* MEN 270.

MEN 376 Thermo/Fluid Laboratory (0.2); 1 cr. Experiments related to fundamentals of fluid and thermal sciences. Topics include fluid properties, flow regimes, flow measurement, energy and power, heat transfer modes, pressure and temperature measurement, data acquisition. *Prerequisite:* MEN 210. *Corequisite:* MEN 320.

MEN 400 Mechanics of Composite Materials (3.0); 3 cr. Introduction to composite materials. Lamina and laminate mechanical properties. Micromechanics. Mechanical and hygrothermal behavior of laminae and laminates. Lamina and laminate strength theories. *Prerequisite:* MEN 302.

MEN 401 Introduction to Mechatronics (3.0); 3 cr. Interfacing of mechanical and electrical systems; Analysis of smart systems: sensors and transducers, electronics and logics, microprocessors and programmable logic controllers, data acquisition, and actuators; Integration of these components to create a complete functional mechatronics system. *Prerequisites:* ENG 202, EEN 206.

MEN 410 Internal Combustion Engines (3.0); 3 cr. Analysis of internal combustion engines: dynamics, thermodynamics, combustion, friction and wear, and other factors affecting power, efficiency and emissions. Design and operating characteristics of different types of engines. *Prerequisite:* MEN 310.

MEN 430 Theory of Machines (3.0); 3 cr. Kinematics of machinery: linkages, cams, gears, bearings, belts, etc. Static and dynamic balancing and force analysis of machines. *Prerequisites:* MEN 201, MEN 370.

MEN 435 Automated Controls (3.0); 3 cr. Feedback analysis and control of linear systems, with emphasis on linear system dynamics, time and frequency response, stability analysis, classical control theory, and controller design for Mechanical Engineering applications. *Prerequisites:* MEN 201, MAT 235.

MEN 437 Mechanical Engineering Design (3.0); 3 cr. Design of machine elements. System reliability. Interchangeability of mechanical devices. Stress-strain relationship in mechanical elements configuration. *Prerequisite:* MEN 302.

MEN 439 Engineering Instrumentations (3.0); 3 cr. Fundamentals of experimental methods, data acquisition and treatment, error analysis. Design and selection of measurement tools used in mechanical engineering. *Prerequisite:* MEN 401.

MEN 471 Manufacturing Technology Laboratory (0.2); 1 cr. Experiments related to fundamentals of manufacturing processes. Topics include properties of materials, metrology, foundry processes, cold and hot working of metals, machining processes and machines tools, welding and joining processes, heat treating techniques. *Prerequisite:* MEN 340.

MEN 489 Approved Professional Training (0.0); 1 cr. Two-month-training in a mechanical engineering environment in which the student is exposed to different aspects of mechanical engineering practice and equipment: design, construction, testing, maintenance, etc. *Prerequisite:* Department Approval.

MEN 503 Theory of Plates and Shells (3.0); 3 cr. Rectangular and circular plates. Variational methods in the analysis of plates and shells. Plates of unusual shape. Shear deformation effects. Large deformation analysis. Analysis of cylindrical shells. *Prerequisite:* MEN 302.

MEN 507 Structural Fatigue (3.0); 3 cr. Fatigue design and analysis, strain-life versus stress-life methods, mean stress accounting relationships, notch stress and strain analysis, dos and don'ts in design, residual stresses and their effects on fatigue strength, variable amplitude loading, multi axial fatigue. *Prerequisite:* CEN 203 or MEN 202.

MEN 508 Engineering Biomechanics (3.0); 3 cr. Overview of the structure and mechanics of the musculoskeletal system with an emphasis on human gait. Use of the concepts of mechanical engineering along with the anatomical and anthropometric parameters to understand the mechanics of the musculoskeletal components under static/dynamic loading. Modeling of the bones, tendons, cartilage and muscles using composite material homogenization and viscoelastic theories. The function of joints and artificial joints will be discussed as well as emerging new technologies in the biomechanics field. *Prerequisite:* MEN 200, *Corequisite:* MEN 430.

MEN 510 Energy Conversion (3.0); 3 cr. Fundamentals of energy conversion: thermal power plants, nuclear and fossil fuels, etc.; Energy resources; Energy conservation and recovery; Energy Storage; Pollution and environmental issues. *Prerequisite:* MEN 310.

MEN 512 Industrial Refrigeration (3.0); 3 cr. Fundamentals of refrigeration systems; Refrigeration cycles; Design and selection of components; Cold storage facilities. *Prerequisite:* MEN 310.

MEN 515 Heating, Ventilating and Air-Conditioning (3.0); 3 cr. Design and analysis of HVAC systems and components, comfort, cooling and heating load calculations, piping and duct design, domestic hot and cold water system. Introduction to refrigeration. *Prerequisite:* MEN 310.

MEN 516 Piping Networks (3.0); 3 cr. Design of piping networks with emphasis on water distribution systems in buildings: plumbing systems, fire-fighting systems, hot and cold water distribution; Codes and standards. *Prerequisite:* MEN 321.

MEN 517 Solar Energy (3.0); 3 cr. Fundamentals of solar radiation, design and analysis of solar systems for both low and high temperature applications, passive and active solar thermal engineering, design of solar collectors, energy storage systems. *Prerequisite:* MEN 310.

MEN 518 Renewable Energy Systems (3.0); 3 cr. Renewable energy resources and systems: Solar energy, wind energy, geothermal energy, biomass, etc. Applications in buildings and power generation. *Prerequisite:* MEN 310.

MEN 520 Fluid Power Control (3.0); 3 cr. Fundamentals of fluid power technology: hydraulic fluids and system components like pumps, valves, motors, and cylinders; pneumatic systems, fluidic components. Design, analysis and control of fluid power circuits. *Prerequisite:* MEN 321.

MEN 523 Applied Aerodynamics (3.0); 3 cr. Fundamental concepts of aerodynamics and their application to the design of airplanes, automobiles and racing cars. Steady/unsteady, incompressible/compressible, inviscid/viscous fluid flows over airplane wings, airplanes and automotive bodies. *Prerequisite:* MEN 321.

MEN 526 Fundamentals of Gas Turbines (3.0); 3 cr. Types of gas turbines; Design and selection of components: Compressors, Combustion Chambers, Turbines, Diffusers/Nozzles; Systems for stationary, automotive and aircraft applications. *Prerequisite:* MEN 310.

MEN 534 Joining Processes: Welding, Soldering and Brazing (3.0); 3 cr. Analysis of various joining processes: mechanisms of surface bonding; welding metallurgy; effect of heat input on resulting microstructures; residual stresses and distortion; welding processes: MIG, TIG, Laser, electron beam, spot welding, resistance welding. *Prerequisite:* MEN 340.

MEN 540 Robots and Manipulators (3.0); 3 cr. Concepts underlying the design and application of computer-controlled manipulators: Manipulator geometry, work volume, sensors, feedback control of manipulator linkages, kinematics, trajectory planning, programming, robot system architecture, applications in mechanical engineering. *Prerequisite:* MEN 435. *Corequisite:* MEN 430.

MEN 541 Automotive Mechatronics (3.0); 3 cr. Fundamentals of automotive mechatronics; Overview of sensors and actuators used in motor vehicles; Communication protocols and control systems. *Prerequisite:* MEN 401.

MEN 550 Computational Methods in Thermal and Fluid Mechanics (3.0); 3 cr. Physical and mathematical foundations of computational fluid mechanics and heat transfer with emphasis on applications: governing equations and mathematical approximations; partial differential and integral equations, discretization and solution methods, stability and convergence. Introduction to physical modeling of turbulence, combustion, and radiation. *Prerequisites:* MEN 310, MAT 335, CSC 212.

MEN 570 Advanced Mechanical Engineering Graphics (0.2); 1 cr. Application of the Building Information Modeling (BIM) through Computer Aided Design (CAD). Mechanical, electrical and plumbing (MEP) plans are designed, documented, visualized and simulated. 3D parametric models of MEP systems from engineering design through construction documentation. *Prerequisite:* MEN 370. *Corequisite:* MEN 310.

MEN 571 Design and Machinery Laboratory (0.2); 1 cr. Applications of mechanical design techniques to complex systems. Topics include mechanisms - linkages, springs, gears and gear trains, bearings, etc. - assembly processes, geometric dimensioning and tolerance, mechanical vibrations, balancing of machineries. *Prerequisites:* MEN 330, MEN 430, MEN 471.

MEN 573 Mechatronics and Control Laboratory (0.2); 1 cr. Applications of control theory to mechanical systems and evaluation of their performance. Topics include feedback systems, PLC control systems, mechatronics systems, etc. *Prerequisites:* MEN 401, MEN 435, EEN 207.

MEN 575 Additive Manufacturing Laboratory (0.2); 1 cr. Integration and usage of digital additive manufacturing as a modern technique. Overview of the diverse technologies of additive manufacturing. Application of 3D printing technologies and experimentation with different materials. Topics include manufacturing of 3D printing machines, mechanical properties of printed objects, understanding the various printing settings and their effects on print quality, strength, speed, and cost, optimizing designs based on the technology used, selecting appropriate materials for the application, introduction to product design. *Prerequisite:* MEN 471.

MEN 576 Applied Fluid Mechanics Laboratory (0.2); 1 cr. Applications of thermo-fluid theories to the design and evaluation of turbomachinery. Topics include pumps and pumping stations, hydraulic turbines, fans and compressors, drag and lift experiments using wind tunnels. *Prerequisites:* MEN 321, MEN 376.

MEN 578 Applied Energy Laboratory (0.2); 1 cr. Experiments dealing with energy related technology. Topics include heating, ventilating, air-conditioning, refrigeration, combustion techniques, energy conversion, renewable energy - solar, wind. *Prerequisites:* MEN 310, MEN 376.

MEN 580 Finite Elements Methods (3.0); 3 cr. The concepts and fundamentals of the finite element method with applications to problems in solid mechanics, fluid mechanics, and heat transfer. *Prerequisites:* MEN 302, MEN 310.

MEN 581 Special Topics in Mechanical Engineering (3.0); 3 cr. Material includes coverage of recent developments in mechanical engineering that are needed to update students on the latest technologies. Department determines topics to be covered and prerequisites when offered.

MEN 589 Cooperative Professional Experience (6.0); 6 cr. This course gives students an opportunity to apply and extend academic knowledge while employed with qualified employers. A final report is required. *Prerequisite:* Department approval.

MEN 598 Engineering Design I (1.0); 1 cr. Development of a project proposal that includes the following items: Choice of project topic, literature survey, market analysis, feasibility study, project timeline, list of materials and cost, engineering ethics issues, social and environmental impact, etc. *Prerequisite:* ENL 230 or ENL 223 or ENL 231, Department approval.

MEN 599 Engineering Design II (2.0); 2 cr. Implementation of the engineering design project that was proposed in MEN 598. Includes report, final presentation. *Prerequisite:* MEN 598.

THE DEGREE OF MASTER OF SCIENCE IN MECHANICAL ENGINEERING

Program Educational Objectives

The program will prepare students to:

- To provide engineers with the opportunity to further develop their knowledge and skills in mechanical engineering so that they can adapt very quickly to technological changes in the workplace.
- To equip graduates with the ability to practice their profession with advanced skills or to pursue doctoral studies.

Program Learning Outcomes

- Conduct, present, and defend independently quality, original research.
- Demonstrate a broad knowledge in different areas of Mechanical Engineering.
- Demonstrate a depth of knowledge in a chosen emphasis of Mechanical Engineering.

Admission Requirements

Admission to the MS in Mechanical Engineering program is subject to the University graduate admission requirements, as stated in this Catalog under "Graduate Admission." In addition, the following requirements are to be met:

- Bachelor of Engineering degree in Mechanical Engineering or its equivalent from a recognized university (holders of BS degrees in Mechanical Engineering will have to take a set of remedial courses to be specified on a case-by-case basis to meet the total number of credits required);
- Cumulative GPA of 3.0 minimum (or its equivalent from a recognized faculty of engineering);
- GRE Scores; and
- Approval of the Faculty Graduate Committee.

Furthermore, applicants should be able to demonstrate proficiency in the English language. All English requirements, as stated in this Catalog under "Graduate Admission," are to be fulfilled.

Graduation Requirements

The program leads to the degree of Master of Science in Mechanical Engineering awarded once the following requirements are met:

- The candidate must complete a total of 30 credits with a minimum cumulative GPA of 3.0/4.0. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 Cs per program. Failed courses may be repeated once provided that the grade on the failed course is equal to "D" or higher. Failing a course with an "F" grade means an automatic exclusion from the program;
- Holders of a Bachelor of Engineering in Mechanical Engineering (5-year program leading to the degree of BE) from a recognized university may apply to transfer a maximum of 12 credits from their undergraduate upper-level courses equivalent to 500-level Mechanical Engineering courses at NDU. Only courses with a "B" grade can be considered for transfer;
- The candidate must attend a series of 0-carrying credit seminars as recommended by the Faculty Graduate Committee. The course grading is based on attendance and is pass or fail; and
- The residency requirements and maximum load per semester are as per rules and regulations for graduate programs at Notre Dame University-Louaize.

Course Requirements
Mandatory Courses (6 cr.):
MEN 600 or equivalent (as approved by the Faculty Graduate Committee), MEN 700.

Thesis and Seminar Courses (6 cr.):
MEN 680, MEN 790.

Elective Courses (18 cr.):
Choose one course, at least, from each required pool and the remaining from the pools of electives under each category. The electives must include at least one 700-level course.

Mechanics/Sciences of Materials:
Required: MEN 601 or MEN 602 or MEN 603.
Electives: MEN 620, MEN 621, MEN 624, MEN 625, MEN 626, MEN 720, MEN 721, MEN 722.

Thermal/Fluid Sciences:
Required: MEN 605 or MEN 606 or MEN 607.
Electives: MEN 631, MEN 632, MEN 634, MEN 636, MEN 645, MEN 730, MEN 731, MEN 732, MEN 734, MEN 737.

Manufacturing/Machinery:
Required: MEN 610 or MEN 611 or MEN 612.
Electives: MEN 650, MEN 652, MEN 654, MEN 655, MEN 750, MEN 751, MEN 753.

Control/Mechatronics:
Required: MEN 615 or MEN 616 or MEN 617.
Electives: MEN 660, MEN 663, MEN 760, MEN 761, MEN 764.

Engineering Analysis and Special Topics:
Electives: MEN 672, MEN 673, MEN 681, MEN 770, MEN 781.

Graduate Courses: Mechanical Engineering

MEN 600 Computational Methods for Mechanical Engineering (3.0); 3 cr. Advanced numerical techniques for mechanical engineering fields involving differential and integro-differential equations, special functions and integrals, transforms, etc.

MEN 601 Physical Metallurgy (3.0); 3 cr. Equilibrium and phase relations in metallic systems. Kinetics of phase transformations. Annealing and precipitation phenomena. Solution thermodynamics. Dislocations, plasticity, work hardening and fracture of crystalline solids.

MEN 602 Theory of Elasticity (3.0); 3 cr. Stress and strain at a point. General equations of elasticity. Plane stress, plane strain problems. Torsion of prismatic bars. Energy methods.

MEN 603 Materials and Their Properties (3.0); 3 cr. Structure-processing-properties relationship of materials including metals, polymers, glasses and ceramics, electronic materials, and composites.

MEN 605 Statistical Thermodynamics (3.0); 3 cr. Fundamentals of statistical mechanics. Quantum mechanics and statistics as applied to thermodynamics. Behavior of gases and solids. Fermi and Bose systems. Chemical equilibrium.

MEN 606 Viscous Flows (3.0); 3 cr. Fundamentals of real flow phenomena: concepts of stress and strain and derivation of Navier-Stokes equations. Application to boundary layers, creeping flows and lubrication. Flow instabilities and turbulence.

MEN 607 Principles of Combustion (3.0); 3 cr. Fundamentals of combustion processes. Combustion thermodynamics and reaction kinetics. Combustion phenomena: ignition, quenching, detonation and deflagration. Flame instabilities. Diffusion and premixed flames. Introduction to turbulent combustion.

MEN 610 Advanced Vibration (3.0); 3 cr. Advanced topics in vibration theory and its application to mechanical systems. Topics include vibration analysis of multi-degree of freedom systems, distributed and nonlinear systems, random vibration analysis, and vibration control.

MEN 611 Advanced Mechanical Design (3.0); 3 cr. Application of Quality Function Deployment for product design. Design for manufacture. Design for assembly. Design for disassembly. System design and rapid prototyping.

MEN 612 Advanced Manufacturing Processes (3.0); 3 cr. Advances in manufacturing technology. Application of computer numerical control (CNC) to various product manufacturing. Hydro forming processes. Selective laser sintering. Powder metallurgy. Electrochemical machining.

MEN 615 Advanced Mechatronics (3.0); 3 cr. Advanced concepts of Mechatronics. Embedded microcontrollers and their programming. Power and interfacing electronics. Actuators and sensors, and their integration to create complete functional mechatronics systems; Design and development of intelligent machines, emphasizing topics related to sensor-based control of mobile robots.

MEN 616 Advanced Topics in Control Theory (3.0); 3 cr. Fundamentals of modern and advanced control systems. Analog and digital control. Multivariable systems. Robust and optimal control of linear systems. Introduction to intelligent control techniques (neural network, fuzzy logic, etc.). Case studies involving applications in mechanical engineering fields.

MEN 617 Advanced Instrumentation (3.0); 3 cr. Fundamentals of experimental methods. Data acquisition and signal processing. Uncertainty analysis. Design and selection of analog and digital sensors used in mechanical engineering.

MEN 620 Continuum Mechanics (3.0); 3 cr. Mechanics of continuous media. Basic concepts of stress, strain, constitutive relationships; conservation laws are treated using Cartesian tensor notation. Examples from both solid and fluid mechanics investigated.

MEN 621 Theory of Elastic Stability (3.0); 3 cr. Buckling of Columns, frames and plates. Kinematic approach to stability. Large deflections. Energy approach to buckling. Plate and shell buckling. Inelastic buckling of columns. Creep buckling.

MEN 624 Fracture Mechanics (3.0); 3 cr. Mechanics of flawed structures. Concepts include Griffith theory, Irwin analysis, energy analysis of cracked bodies, fracture toughness testing, plane strain, plane stress, transition temperature concepts, subcritical flaw growth.

MEN 625 Experimental Stress Analysis (3.0); 3 cr. Experimental techniques including strain gages and strain gage-based devices. Interferometric techniques. Photoelasticity and geometric Moire methods.

MEN 626 Mechanics of Composite Materials (3.0); 3 cr. Introduction to composite materials. Lamina and laminate mechanical properties. Micromechanics. Mechanical and hygrothermal behavior of laminae and laminates. Lamina and laminate strength theories.

MEN 631 Convective Heat Transfer (3.0); 3 cr. Fundamentals of convection. Forced convection. Free convection. Similarity between momentum and heat transport. Interaction with other heat and mass transfer mechanisms. Introduction to numerical techniques.

MEN 632 Radiative Heat Transfer (3.0); 3 cr. Fundamentals of radiation. Prediction of radiative properties using classical electromagnetic theory. Properties of real materials. Governing equations. Radiation between nondiffuse and nongray surfaces. Radiation in the presence of other energy transfer modes. Approximate and computer solution techniques.

MEN 634 Experimental Methods in Thermal/Fluid Sciences (3.0); 3 cr. Theory and practice in the use of instrumentation for measuring temperature, velocity, pressure and concentration; measurement of classical flow fields; Laser-based measurement techniques.

MEN 636 Turbomachinery: Design and Analysis (3.0); 3 cr. Representation of performance of turbomachines. Mechanism of energy transfer. Factors limiting design and performance including surge, choking, and cavitation. Two- and three-dimensional flow phenomena. Performance analysis including multistage effects and off-design performance. Introduction to computational techniques.

MEN 645 Computational Fluid Dynamics (3.0); 3 cr. Physical and mathematical foundations of computational fluid mechanics and heat transfer with emphasis on applications: governing equations and mathematical approximations; partial differential and integral equations, discretization and solution methods, stability and convergence. Introduction to physical modeling of turbulence, combustion, and radiation. *Prerequisite:* MEN 600.

MEN 650 Vehicle Dynamics (3.0); 3 cr. Dynamic modeling of vehicles. Tire mechanics. Suspension kinematics. Vehicle stability. Vehicle structural design criteria. Vehicle vibrations and ride criteria. Design considerations for vehicles.

MEN 652 Machining Processes (3.0); 3 cr. Introduction to machining operations. Cutting tools and tool wear mechanisms. Cutting forces and mechanics of machining. Machining process simulation. Surface generation. Temperatures of the tool and workpiece. Machining dynamics. Non-traditional machining.

MEN 654 Metalworking Processes (3.0); 3 cr. Fundamentals of metal forming theory. Stress-strain relationships in elasticity and plasticity. Methods for analyzing metalworking processes. Workability of metals. Individual constraints in metalforming and their influence on the forming process. Fundamentals of theory and practice of basic bulk metal and sheet metalworking processes. Calculation of energy and loads in forming. Selection of forming equipment.

MEN 655 Computer Aided Manufacturing (3.0); 3 cr. Fundamentals of industrial automation. Numerical control (NC) systems. Part programming. Robotics in manufacturing. Materials handling and automated storage systems. Group technology. Automated identification and inspection systems. Flexible manufacturing systems.

MEN 660 Nonlinear and Adaptive Control (3.0); 3 cr. Analysis of the qualitative behavior of nonlinear systems. Synthesis and design of controllers for such systems. Introduction to nonlinear system. Theory and stability analysis. Techniques for nonlinear control design with particular emphasis on techniques applicable to mechanical and mechatronics systems.

MEN 663 Machine Vision (3.0); 3 cr. Design and analysis of autonomous systems with computer vision. Image formation and low level image processing. Theory and techniques for extracting features from images. Measuring shapes and locations. Object recognition. Design projects using image processing software and hardware systems.

MEN 672 Finite Element Methods (3.0); 3 cr. The concepts and fundamentals of the finite element method with applications to problems in solid and fluid mechanics and heat transfer.

MEN 673 Perturbation Methods (3.0); 3 cr. Solution of nonlinear problems in solid and fluid mechanics and dynamics by use of asymptotic perturbation techniques. Asymptotic expansions. Regular and singular perturbations and applications in dynamics, potential, viscous and compressible flows. Uniformly valid approximations in various physical problems. Generalized boundary-layer techniques. Coordinate straining techniques. Matched asymptotic expansions and multiple scales. Problems with several time or length scales. *Prerequisite:* MEN 600.

MEN 680 Seminars in Mechanical Engineering; 0 cr. A series of seminars related to mechanical engineering to be attended on regular basis as advised by the graduate advisor. *Prerequisite:* Department Approval.

MEN 681 Special Topics in Mechanical Engineering (3.0); 3 cr. A course to accommodate various topics related to mechanical engineering non-listed with a specific course name. *Prerequisite:* Department Approval.

MEN 700 Research Methods in Mechanical Engineering; 3 cr. Development of research-oriented skills. Choice of topics. Literature reviews. Communication skills. Copyright issues. Social and environmental impacts. *Prerequisite:* Department Approval.

MEN 720 Solidification and Melting (3.0); 3 cr. Thermodynamics, kinetics, and morphologies of solid-liquid interfaces. Heat flow phenomena in casting and crystal growth. Structure of molten systems. Mechanics of solidification of metals under equilibrium and nonequilibrium conditions. Nucleation and growth phenomena. Solute redistribution during freezing. Metal transport during freezing. Grain size control. Application of theory to production of engineering alloys. *Prerequisite:* MEN 601.

MEN 721 Theory of Plasticity (3.0); 3 cr. Plastic yield conditions and stress-strain relations. Behavior of elastic-perfectly plastic members. Plain strain in plastic members. *Prerequisite:* MEN 602.

MEN 722 Advanced Theory of Fracture (3.0); 3 cr. Review of linear elastic and elastic-plastic fracture mechanics. Fracture dynamics. Ductile fracture. Stable crack growth and mixed mode fracture. Analytical methods for fatigue and life assessment in advanced materials. Design of structures against fracture. Discussion of advanced topics from the recent literature. *Prerequisite:* MEN 624.

MEN 730 FEM for Fluid Dynamics (3.0); 3 cr. Analysis of finite element methods for basic problems in fluid mechanics. Scalar transport equations. Compressible and incompressible Navier-Stokes equations. Emphasis on developing and analyzing formulations that are stable and higher-order accurate such as Galerkin/least-squares methods and SUPG methods. *Prerequisite:* MEN 672.

MEN 731 Turbulent Flows (3.0); 3 cr. Transition from laminar to turbulent flow. Statistical parameters of turbulence. Instability theories. Phenomenological theories. Transport mechanisms of turbulence. Applications to wall bounded and free flows. Modeling of turbulent flows. *Prerequisite:* MEN 606.

MEN 732 Multiphase Flows and Heat Transfer (3.0); 3 cr. Fundamentals of multiphase fluid mechanics, pressure drop, stability analysis, critical flow and dynamic waves, flow regime analysis, and phase separation and distribution phenomena. Single and multicomponent boiling and condensation heat transfer phenomena. Introduction to computational techniques. *Prerequisite:* MEN 606.

MEN 734 Micro Flows and Heat Transfer (3.0); 3 cr. Theory and applications of micro flows. The continuum hypothesis and the various flow regimes. Shear and pressure driven micro flows. Electrokinetically driven liquid micro flows. Compressibility effects of the micro flow of gases. Particulate flows in bio-applications. Modeling techniques. *Prerequisite:* MEN 606.

MEN 737 Applied Combustion and Pollution (3.0); 3 cr. Chemical equilibrium and reaction kinetics. Structure of flames. Flammability limits. ignition and quenching. Flame stabilization. Combustion of liquid and solid fuels. Pollutant formation in combustion. Reduction of emission by modification of combustion parameters. Burners for liquid fuel and pulverized solid particles. Combustion of solid fuel in fixed and fluidized bed. *Prerequisite:* MEN 607.

MEN 750 Optimization Methods in Design (3.0); 3 cr. Optimum design of mechanical elements and systems. Formulation and solution of mechanical design problems by use of mathematical programming methods. *Prerequisite:* MEN 611.

MEN 751 Reliability in Mechanical Design (3.0); 3 cr. Theory and applications of probabilistic methods in the analysis and synthesis of engineering systems. Review of basic probability concepts, random variables and distributions and uncertainty quantification and propagation. First-order, second-order and advanced mean value reliability methods. Monte Carlo simulation, variance reduction techniques, sensitivity analysis and reliability-based design optimization. *Prerequisite:* MEN 611.

MEN 753 Design for Sustainability (3.0); 3 cr. Environmentally conscious design or Ecodesign. Applicable standards and limits. Life cycle assessment. Sustainable technology for sustainable planning. Case studies: Waste reduction and management and renewable energy sources. *Prerequisite:* MEN 611.

MEN 760 Vehicle Control Systems (3.0); 3 cr. Overview and analysis of different sensors, actuators, and control devices in mobile robots and automotive systems. Cruise control. Engine and transmission control. Anti-lock brakes. Traction control. Active suspensions. Human factors and the role of the driver in the control loops. System failure analysis. *Prerequisite:* MEN 615.

MEN 761 Robotics: Design and Control (3.0); 3 cr. Advanced approaches to modeling, control and applications of robot manipulators: Kinematic modeling of manipulators; methods for obtaining dynamic model of manipulators; control of manipulators based on independent joint and multivariable control approaches, control of the contact forces between a manipulator and its environment; and adaptive control of manipulators.

MEN 764 Microelectromechanical Systems (3.0); 3 cr. Introduction to Microelectromechanical (MEMS) systems. Basic concepts of smart materials. Microsystem design and analysis. Simulation and manufacturing. Typical applications: microsensors, microfluids, etc. *Prerequisite:* MEN 615.

MEN 770 Advanced Finite Element Methods (3.0); 3 cr. Advanced concepts of the finite element method. Hybrid and boundary element methods. Nonlinear, steady-state, propagation, and eigenvalue problems. *Prerequisite:* MEN 672.

MEN 781 Advanced Topics in Mechanical Engineering (3.0); 3 cr. A course to accommodate advanced topics related to mechanical engineering non-listed with specific course name and requiring basic skills developed in lower level courses. *Prerequisite:* Department Approval.

MEN 790 Master Thesis; 6 cr. Implementation of a research project including the writing of a thesis report and a final presentation. *Prerequisite:* MEN 700.

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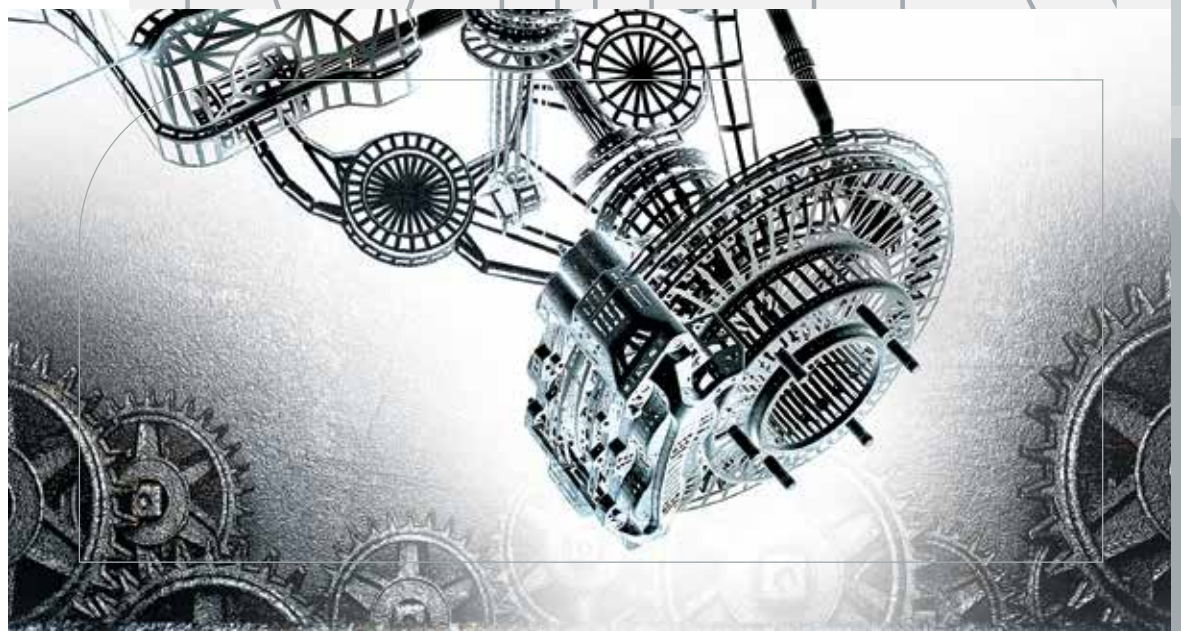


CHEMICAL ENGINEERING

THE DEGREE OF BACHELOR OF ENGINEERING IN CHEMICAL ENGINEERING

Mission

The Chemical Engineering program strives to produce chemical engineers who understand the ethical, social, economic and environmental context of their profession and who apply their knowledge with judgment and responsibility to develop ways to utilize the materials and forces of nature for the benefit of mankind. The program prepares the students either to immediately enter professional practice upon graduation or to pursue graduate studies, without neglecting the requirements for a fruitful life by emphasizing the University model of liberal arts education. The curriculum of the program shares three basic tenants: scientific and technological excellence, balance between theory and practice, and a commitment to self-maintained and enduring personal and professional development. The results are chemical engineers naturally inclined to life-long learning and problem-solvers ready to deal with any technological challenge at local, regional and/or international scales.

Program Educational Objectives

The program will prepare students to:

- Practice professionally in diverse work environments by applying chemical engineering fundamentals and using state-of-the-art computational tools within the broad range of the chemical engineering profession.
- Advance within their careers as team members or leaders with the ability to think critically and communicate effectively to solve multidisciplinary problems taking into account ethical and environmental constraints.
- Engage in professional development and research activities by either continually learning and improving or pursuing graduate studies.

Program Learning Outcomes

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Degree Requirements

The Chemical Engineering program is currently hosted by the Department of Mechanical Engineering and leads to the degree of Bachelor of Engineering in Chemical Engineering. The course requirements of the degree involve a total of 150 credits divided into the following pools:

Liberal Arts Curriculum **27 cr.**

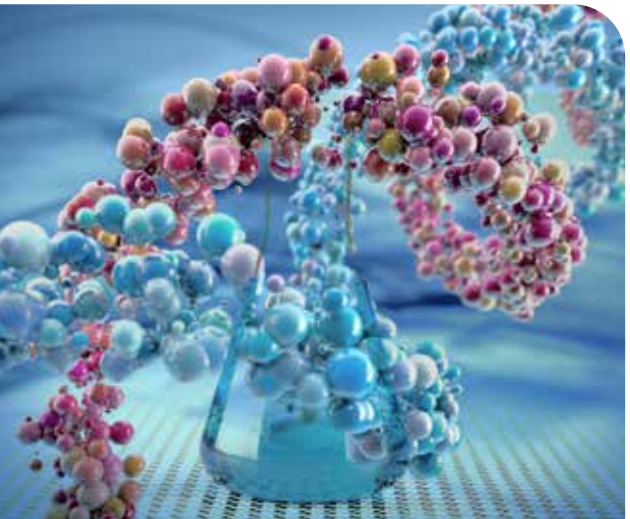
Core Requirements **43 cr.**
BIO 204, CEN 201, CHM 211, CHM 271, EEN 205, CEN 392, ENG 200, ENG 202, ENG 270, MAT 215, MAT 235, MAT 326, MAT 339, MEN 210, MEN 320, PHS 203.

Major Requirements **63 cr.**
CHE 201, CHE 210, CHE 270, CHE 310, CHE 320, CHE 330, CHE 341, CHE 342, CHE 350, CHE 371, CHE 420, CHE 430, CHE 431, CHE 442, CHE 443, CHE 460, CHE 470, CHE 471, CHE 489, CHE 598, CHE 599, CHM 221, CHM 222, CHM 272, CHM 323, MAT 213, MAT 224.

Technical Electives **12 cr.**
Choose four (4) courses from the following pool:
CHE 501, CHE 502, CHE 506, CHE 507, CHE 508, CHE 511, CHE 515, CHE 520, CHE 521, CHE 525, CHE 530, CHE 533, CHE 541, CHE 543, CHE 545, CHE 560, CHE 561, CHE 581, CEN 362, CEN 393, FQM 427, MEN 510, MEN 518, PEN 508, PEN 510.

Laboratory Electives **2 cr.**
Choose two (2) courses from the following pool:
CHE 570, CHE 571, CHE 573, CHE 574, CHE 576, CEN 365, MEN 578.

Free Electives **3 cr.**
Choose any course, of sophomore level (200-level) or above, offered by the University.



Undergraduate Courses: Chemical Engineering

CHE 201 Chemical Engineering Principles (3.0); 3 cr. Introduction to basic methods and principles in Chemical Engineering. The fundamentals of engineering calculations applied to steady-state chemical systems (units and dimensions), processes and process variables, behavior of fluids, mass and energy balances, recycle and by-pass. *Prerequisite:* CHM 211. *Corequisite:* MEN 210.

CHE 210 Chemical Engineering Thermodynamics (3.0); 3 cr. Review of thermodynamic laws and their application on chemical systems. Introduction to the concepts of free energy and chemical potential and their influence on phase equilibria and chemical reaction equilibrium. Application of thermodynamic equilibrium; phase rule; chemical reaction equilibrium for homogenous and multicomponent/ multiphase systems. Introduction to the design of binary distillation. *Prerequisites:* CHM 211, MEN 210.

CHE 270 Technical Drawing for Chemical Engineers (0.2); 1 cr. Introduction to basic technical drawing skills and terminology used in chemical and process engineering. Overview of the major equipment and control loops involved in chemical processes. Drawing of process flow diagrams (PFDs) using existing CAD software. *Prerequisites:* CHE 201, CHE 210.

CHE 310 Heat and Mass Transfer Operations (3.0); 3 cr. This course provides an overview of the transport of heat and mass by different mechanisms: diffusion and convection; transport of heat by radiation; convective mass transfer. The theory of interfacial mass transfer is also introduced. Mathematical formulation of problems and equipment design for heat and mass transfer of gas/liquid and liquid/liquid operations including drying, absorption and stripping. *Prerequisite:* CHE 210. *Corequisite:* MEN 320.

CHE 320 Chemical Engineering Kinetics and Catalysis (3.0); 3 cr. This course covers the basic concepts of heterogeneous, homogeneous and biocatalysis. Reaction kinetics and reaction rate theory are also discussed. Catalyst characterization, the requirements of a successful catalyst as well as surface reactivity are covered. Applications include steam reforming process, Fischer-Tropsch process, synthesis of ammonia, oil refining as well as some insights on environmental catalysis. *Prerequisite:* CHE 210.

CHE 330 Separation Processes (3.0); 3 cr. This course covers concepts underlying separation processes. Equilibrium-based processes with staging and continuous contacting, distillation, absorption/stripping, liquid-liquid extraction, leaching. The use of analytical and graphical methods to design separation equipment. Membrane based separations, ion exchange and chromatography are also discussed. *Prerequisites:* CHE 201, CHE 210.

CHE 341 Instrumentation and Measurements (3.0); 3 cr. This course covers the spectroscopic, electro-analytical and chromatographic methods used to detect and analyze chemical compounds. Data acquisition, uncertainty and error analysis are discussed. The selection of sensors and other pick-up devices to be used in conjunction with data acquisition software are covered. *Prerequisites:* EEN 205, CHE 201.

CHE 342 Instrumentation Lab (0.2); 1 cr. Hands-on equipment and analytical methods used to detect and quantify chemicals as well as to measure chemical process variables. Topics include: chromatographic and spectroscopic methods, sensors, data conditioning, amplification, filtering, error uncertainty, using Data Acquisition software. *Corequisite:* CHE 341.

CHE 350 Materials Science (3.0); 3 cr. This course is a general introduction to material science with a special focus on polymers. Topics covered are: material microstructures, dislocations, and defects; Alloying and analysis of phase diagrams; polymer synthesis techniques, characterization of molecular weight, crystallinity, glass transition, phase behavior, visco-elasticity, rheology; Mechanical properties of metals, polymers, and composites. *Prerequisites:* CHM 222, CHM 323.

CHE 371 Transport Phenomena Lab (0.2); 1 cr. Hands-on experience with heat, mass and momentum transport phenomena. Topics include: mass and heat convection, heat conduction, mass diffusion, transport of heat by radiation, flow regimes. *Corequisite:* CHE 310.

CHE 420 Reaction Engineering and Reactor Design (3.0); 3 cr. Review of fundamental concepts in chemical reaction thermodynamics and kinetics and their application to the design of isothermal and non-isothermal reactors. Mass and energy balances for homogenous ideal reactors. The concepts of batch, semi-batch and continuous operations are discussed as well as reactor stability. Reactor design with emphasis on the minimization of by-products and pollution production. The effect of heat and mass transfer on the global rate are discussed for heterogeneous reactions. *Prerequisites:* CHE 310, CHE 320.

CHE 430 Unit Operations (3.0); 3 cr. Selected unit operations in solids handling including comminution, screening and classification. Transportation, mixing and storage of fluids. Fluid flow in pipes and conduits. Principles of phase separation of multi-phase systems through evaporation, sedimentation, fluidization and other techniques. *Prerequisites:* CHE 330, MEN 320.

CHE 431 Unit Operations Lab (0.2); 1 cr. Experiments performed on the separation of multi-phase systems. Experimental studies of unit operations. Hands-on experience involving chemical plant operations, in general. *Corequisite:* CHE 430.

CHE 442 Process Control (3.0); 3 cr. Dynamic modeling of processes, transfer functions, first and higher-order systems, dead-time, open and closed loop responses, empirical models, stability, feedback control, controller tuning, transient response, frequency response, feedforward and ratio control, introduction to digital control, introduction to multivariable control. *Prerequisites:* CHE 341, MAT 339.

CHE 443 Process Simulation and Control Lab (0.2); 1 cr. Hands-on experience with chemical process simulation and control. Chemical engineering variables control such as: temperature, pressure and flow. Modelling, simulation, performance of systems, analysis and controller designs, MATLAB. Introduction to process design and control tools using existing CAD software. *Prerequisite:* CHE 442. *Corequisite:* CHE 460.

CHE 460 Chemical Process Design (3.0); 3 cr. Structure of process design systems, degrees of freedom, information flow. Introducing standards and practices in design work. Computer-aided process and plant design programs, flow sheets for chemical processes, specifications, recycle convergence, optimization, economics. Safety and environmental control in plant design. Methodology for making rational decisions and analysis of design alternatives. *Prerequisites:* CHE 420. *Corequisite:* CHE 430.

CHE 470 Process Safety and Regulations (3.0); 3 cr. This course outlines the hazards associated with the operations of process industries. Estimates of the extent of each hazard using methods of quantitative risk assessment and the recommended justification of protection methods are performed including human behavior and human errors. The legislative framework for safety relative to the chemical and process in Lebanon, is outlined. *Prerequisites:* CHE 330, CHE 420.

CHE 471 Chemical Reaction Engineering Laboratory (0.2); 1 cr. This course covers experiments that deal with reactions in batch and continuous reactors. Performing theoretical calculations and experimentation on different types of reactors in homogeneous phase as well as on reactors containing porous catalyst particles. *Corequisite:* CHE 420.

CHE 489 Approved Prof. Training (0.0); 1 cr. Two-month-training in a chemical engineering environment in which the student is exposed to different aspects of chemical engineering practice, processes and equipment. *Prerequisite:* Department approval.

CHE 501 Colloids, Interfaces and surfaces (3.0); 3 cr. The course covers the physical and chemical phenomena that occur at the interface of two phases. Topics include: surface tension, capillarity, electrical aspects of surface chemistry, contact angle, flotation, aggregation and flocculation, detergency, surfactants, lubrication and adhesion, etc. Applications in coating and painting, pharmaceutical and cosmetic industry, food, paper, photographic technology, emulsion polymerization, petroleum recovery. *Prerequisites:* CHE 210, CHM 222.

CHE 502 Polymer Reaction Engineering (3.0); 3 cr. This course covers the properties of polymers such as colligative and thermal properties, solubility and phase behavior, microstructure; rheology of polymer melts; molding and polymer forming processes; Polymerization processes including suspension and emulsion; kinetics of polymerization: step-growth and chain-growth; polymer reactions engineering and reactor design; process control and environmental considerations. *Prerequisites:* CHE 350, CHE 420.

CHE 506 Principles of corrosion (3.0); 3 cr. Thermodynamics and kinetics of metallic corrosion. The common forms of corrosion and corrosion susceptibility tests. Electrochemical measurement of corrosion rates. Corrosion prevention, economic considerations. High temperature oxidation and sulphidation. Corrosion case histories. *Prerequisites:* CHE 320, CHE 350.

CHE 507 Paints, Pigments, and Coatings (3.0); 3 cr. Definition and classification of paints and coatings, functions of paints and coatings, oils and varnishes, lacquers and enamels, main constituents of paints, resin chemistry, manufacturing and uses of some pigments: TiO2, carbon black, azo pigments etc., paint formulation principles, rheology of liquid coatings, surface treatment, methods of paint application, concepts of color and its evaluation, quality control, environmental constraints and toxicity. *Prerequisite:* CHE 501.

CHE 508 Ceramics, Glass and Cement Manufacturing (3.0); 3 cr. This course covers the industrial production of ceramics, glass and cement. Description include: history and main technics of production of ceramics glass and cement, processing of powders, furnace technology, refractories ceramics, physico-chemical features of materials, high-temperature behavior, energy management and environmental impact, quality control, composites with a glass or ceramic matrix. *Prerequisites:* CHE 350, CHE 430.

CHE 511 Desalination (3.0); 3 cr. Overview of the thermal and membrane-based desalination technologies for fresh water production. Fundamental thermodynamic and transport processes for desalination of seawater and brackish ground water will be covered. Discussion of the economic and environmental factors which limit the performance of desalination systems. Emerging technologies for desalination such as nanofiltration will be highlighted. *Prerequisites:* CHE 310, CHE 330.

CHE 515 Food Process Engineering (3.0); 3 cr. The course covers the basic principles that are relevant to food processing operations. The focus will be on energy and

mass balances, heat exchangers, rheology, instrumentation and process control. Applications include the processing of meat, dairy, fruits, vegetables, beer and wine. *Prerequisites:* CHE 310, CHE 420.

CHE 520 Biochemical Engineering (3.0); 3 cr. This course covers the analysis and design of biologically-based processes. Heat and mass transfer applied to enzyme catalysis will be discussed. The focus will be on bioreactor analysis and design, product separation and purification, product characterization methods, microbial growth and metabolism, drug delivery. Ethical aspects will also be considered. *Prerequisites:* BIO 204, CHE 420.

CHE 521 Membrane Separation Techniques (3.0); 3 cr. This course is a general overview of membrane separation processes. It includes a description of the main production techniques of membranes, modules, membrane geometries, mass transfer theory and models, main membrane processes: microfiltration, ultrafiltration, reverse osmosis, etc., membrane and waste water treatment, gas separation, pervaporation and emerging processes. *Prerequisites:* CHE 310, CHE 330.

CHE 525 Pulp and Paper Technology (3.0); 3 cr. The course is an introduction to pulping and papermaking process. Topics include: wood and fiber sources and properties, chemical and mechanical pulp processing and the effect on paper properties, stages and operations of bleaching, waste treatment and environmental regulation, additives to improve quality operation of the wet end and dry end, paper machine operations, paper properties and testing, recycling systems, paper alternatives. *Prerequisite:* CHE 430.

CHE 530, Wastewater Treatment (3.0); 3 cr. Characterization of industrial wastes, petroleum refinery wastes, treatment processes, solid-liquid separation, ion exchange, adsorption, biological treatments, reverse osmosis, economics, regulations, moral, legal and social implications. *Prerequisite:* CEN 362.

CHE 533, Industrial air Pollution Control (3.0); 3 cr. Air pollution effects, control laws and regulations, measurements, emission estimates, meteorology for air pollution control engineers, dispersion models, nature of particulate pollutants, control of primary particulates, control of volatile organic compounds, sulfur oxides and nitrogen oxides, air pollutants and global climate. *Prerequisites:* CHE 320 and CHE 330.

CHE 541 Heavy and Fine Chemicals Processing (3.0); 3 cr. Overview of heavy and fine chemicals, description of manufacturing process and uses of some important heavy and fine chemicals in industry such as: inorganic carbonates, industrial gases: nitrogen, oxygen, ammonia, acetylene; sodium compounds, mineral acids, phosphorus based agrochemicals, nitrogen and potassium based fertilizers. Process safety and environmental constraints will be also discussed. *Prerequisites:* CHM 323, CHE 430.

CHE 543 Fine and Specialty Chemicals Processing (3.0); 3 cr. This course covers processes used in the production of fine and specialty chemicals as well as pharmaceuticals. The focus will be on separation processes, batch and agitated tank operations, process control, detailed description of purification methods including chromatography and quality control. *Prerequisite:* CHE 430.

CHE 545 Principles of Drug Development and Packaging (3.0); 3 cr. This course gives an overview of drug development from its discovery to its manufacturing with emphasis on drug packaging. Topics include: packaging materials properties and selection, packaging machinery, pack testing and evaluation, toxicological testing, special requirements for packaging, marketing expectations, regulatory considerations, and intellectual property. *Prerequisite:* BIO 204.

CHE 560 Production and Usage of Petrochemicals (3.0); 3 cr. Overview of petrochemical technologies, petrochemicals classification, steam cracking to make the building blocks, production and segregation of olefinic and aromatic compounds, basic production unit such as oxidation, sulfonation and halogenation, chemicals from coal, natural gas based compounds, safety, economic aspects, renewable alternatives to petrochemicals. *Prerequisites:* CHM 222, CHE 330.

CHE 561 Petroleum Refining (3.0); 3 cr. Refinery organization, refinery feed stocks and products, refinery process operations such as crude and vacuum distillation, cracking and reforming, design distillation column for petroleum fractionation, refining margins and profitability, environmental constraints on refinery products, term project using actual refinery data to be utilized for typical design calculation on the above operations. *Prerequisite:* CHE 460.

CHE 570 Advanced Process Instrumentation Laboratory; 1 cr. Application of Piping & Instrumentation Diagrams (P&ID) through Computer Aided Design (CAD) and Building Information Modeling (BIM). P&ID diagrams for selected industrially relevant processes are designed, documented, visualized as 2D models, simulated and then illustrated in 3D models. *Prerequisites:* CHE 270, CHE 442

CHE 571 Materials Engineering Laboratory (0.2); 1 cr. This course covers interdisciplinary materials topics such as ceramics preparation, mechanical testing of materials, corrosion and passivation, thermodynamics and structure of materials, materials characterization, catalyst synthesis, structural transitions and structure-property relationships. *Prerequisite:* CHE 350.

CHE 573 Bio-chemical Laboratory (0.2); 1 cr. Bench studies in biotechnology to illustrate properties of biological materials, dynamics, control, and operation of biological systems. *Corequisite:* CHE 520.

CHE 574 Polymer Synthesis Laboratory (0.2); 1 cr. Selected experiments illustrating polymer processing and their mechanical properties are conducted. This includes experiments on plastic and fibrous materials. *Corequisite:* CHE 502.

CHE 576 Food Processing Laboratory (0.2); 1 cr. Selected experiments illustrating food processing and preservation techniques such as mixing, separation, blanching, pasteurization, extrusion, baking, frying, chilling and packaging. *Corequisite:* CHE 515.

CHE 581 Special Topics in Chemical Engineering (3.0); 3 cr. Material includes coverage of recent developments in chemical engineering that are needed to update students on the latest technologies. Department determines topics to be covered and *Prerequisites* when offered.

CHE 598 Engineering Design I (1.0); 1 cr. Development of a project proposal that includes the following items: Choice of project topic, literature survey, market analysis, feasibility study, project timeline, list of materials and cost, engineering ethics issues, social and environmental impact, etc. *Prerequisite:* Department approval.

CHE 599 Engineering Design II (2.0); 2 cr. Implementation of the engineering design project that was proposed in CHE 598. Includes report, final presentation. *Prerequisite:* CHE 598.

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FACULTY PROFILE

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The Faculty of Humanities plays two roles in the academic life of the University. The first is to offer degrees on both the undergraduate and graduate levels; the second is to provide a large array of general education requirements, foreign language courses, and special programs designed for students in the various stages of their academic careers.

Alongside the Faculty of Business Administration and Economics (FBAE) and the Faculty of Natural and Applied Sciences (FNAS), the Faculty of Humanities was one of the three founding faculties at NDU.

During its early years as the Louaize College for Higher Education (LCHE), the Faculty's primary purpose was to provide the NDU community with service courses in the English language, Human Thought, Arabic, Religion, and Political Science, among others. In 1987, a BA in Communication Arts and a BA in Interior and Graphic Design were offered. In 1991, the BA in Advertising and Marketing was introduced. Between 1993 and 1999, additional degrees in English, Translation, Physical Education, Arabic, and International Affairs and Diplomacy on both the undergraduate and graduate levels were successfully introduced.

By 1999, the scope of the Faculty had grown, so much so that in 2000 the Faculty of Political Science and the Faculty of Architecture, Art and Design were formed as independent entities to allow for a more focused approach to the education NDU provided.

Today, in addition to offering Liberal Arts courses and a large wide variety of electives, the Faculty of Humanities offers 8 undergraduate programs and 5 MA programs, in addition to Teaching Diplomas and Certificates. It also welcomes a large number of Intensive English students each semester.

Deans of the Faculty of Humanities

Ms. Niewiadomsky, Fay	**1987 - 1991**
Dr. Frayha, Nemer	**1991 - 1994**
Dr. Eid, Assad	**1993 - 2000**
Dr. Sarru', Boulos	**2000 - 2006**
Dr. Kfouri, Carol (Acting Dean)	**2006 - 2007**
Dr. Kfouri, Carol	**2007 - 2012**
Dr. Willis, Mary-Angela (Acting Dean)	**2012 - 2013**
Dr. Willis, Mary-Angela	**2013 - 2014**
Dr. Abouchedid,Kamal	**2014 - 2022**
Dr. Bou Zeid, Maria	**2022-**

FACULTY OF HUMANITIES

MISSION, VISION, AND VALUES

Mission

The mission of the Faculty of Humanities (FH) is to provide opportunities for Notre Dame University-Louaize (NDU) students to develop their intellectual and interpersonal capacities to their full potential. The Faculty also aims to encourage students to appreciate their culture and to work for justice and peace in their world. With a Liberal Arts education as the foundation of its programs, the mission of the FH is to equip students with a well-rounded knowledge base, enabling them to think critically and independently, to reflect on timeless issues, and to shape progress. The Faculty also aims to train students in professional career-based degrees.

Vision

During the next five years, the Faculty will strive to make NDU a university of choice for undergraduate degrees in Education, English, Physical Education, Psychology, Arabic, Translation, and Media Studies as well as minors in Philosophy and Sociology. To attain this goal, curricula are being reviewed and updated with special emphasis given to the inclusion of courses that offer students exposure to the career they have chosen. In addition, efforts are being made to promote interdisciplinary studies and place greater emphasis on research for both students and faculty members. In line with Pope Saint John Paul II's Ex Corde Ecclesiae, "Research activities will study serious contemporary problems in areas such as the dignity of human life, the promotion of justice for all, the quality of personal and family life, the protection of nature, and the search for peace and political stability" (Article 32). Graduate programs will continue to be expanded to welcome adult learners who wish to further their area of specialization for skill development and capacity building.

Values

As an integral part of a Catholic university, which embraces the Maronite tradition of faith in the role of education to empower its members, the FH places special emphasis on the following in all of its courses and activities:

- Academic integrity;
- Academic excellence;
- Personal ethics;
- Belief in one's self-worth;
- Responsibility of the individual toward one's family and community;
- Respect for tradition;
- Critical thinking;
- Serving others;
- Compassion;
- Teamwork;
- Cross-cultural understanding;
- Social consciousness; and
- Encouraging dialogue between faith and reason *(Ex Corde Ecclesiae #15)*.

ACADEMIC DEPARTMENTS AND DEGREE PROGRAMS

The Department of English and Translation:

- BA English Language;
- BA Translation and Interpretation;
- MA English Language and Literature;
- MA Translation;
- Minor in Arabic;
- Minor in English;
- Minor in Translation;
- Minor in French;
- Minor in Romance Languages; and
- Summer Arabic Program.

The Department of Psychology, Education and Physical Education:

- BA Psychology - Clinical Psychology Emphasis;
- BA Psychology - Educational Psychology Emphasis;
- BA Psychology - Industrial Psychology Emphasis;
- BA Education - Basic Education;
- BA Physical Education and Sport;
- MA Psychology - Educational Psychology Emphasis;
- MA Education - Special Education Emphasis
- MA Education - School Management and Educational Leadership Emphasis
- MA Education - Educational Technology Emphasis;
- Teaching Diploma;
- Teaching Diploma in Arabic Language and Literature;
- Minor in Psychology; and
- Minor in Physical Education.

The Department of Media Studies:

- BA Advertising and Marketing;
- BA Communication Arts - Journalism and Electronic Media Emphasis;
- BA Communication Arts - Radio and Television Emphasis;
- MA Media Studies - Advertising;
- MA Media Studies - Television Production and Management;
- MA Media Studies - Electronic Journalism;
- MA Media Studies - Media Data Analytics Emphasis;
- Minor in Advertising and Marketing;
- Minor in Radio and Television;
- Minor in Journalism; and
- Minor in Public Relations.

The Department of Religious, Cultural and Philosophical Studies:

- Minor in Philosophy; and
- Minor in Sociology.

Self-Designed Interdisciplinary Minor Program

NDU aims to provide students with the programs they need for their future and offers them the opportunity to design their own Self-Designed Interdisciplinary Minor program. Students who would like to explore this option have to fill in the minor proposal with the collaboration of the concerned Faculty and Office of the Registrar. For guidelines, rules, and regulations of the Self-Designed Interdisciplinary Minor, kindly refer to the Office of the Registrar.

FACULTY RESEARCH CENTERS AND FACILITIES

The Faculty of Humanities houses the Center for Applied Research in Education (CARE), the Benedict XVI Endowed Chair of Religious, Cultural, and Philosophical Studies, and the NDU International Film Festival.

The Center for Applied Research in Education leads others in furthering education policy and practice through applied education research and development in Lebanon and the Arab region.

The Benedict XVI Endowed Chair of Religious, Cultural, and Philosophical aims to safeguard and deepen NDU's stated identity, mission, and vision by organizing local and international seminars, conferences, lecture series, symposia, workshops, media round-tables, for students and faculty, and through book and proceedings publication.

The NDU International Film Festival (NDUIFF) is a short film festival founded in 2007 at NDU and is normally celebrated annually in November under its overarching theme, "The Power of Youth." As the theme reflects, the NDUIFF mission is to (a) promote young filmmakers by screening their films in front of a large audience, and (b) promote their talents and artistic excellence.

In addition to the above, the Faculty of Humanities has academic support facilities as follows:

Division of Audio Visual Arts (DAVA)

Writing Center

The Interpretation Laboratory

Psychology Lab

LIBERAL ARTS CURRICULUM (30 cr.)
The Liberal Arts Core Curriculum (LAC) is applied to newly enrolled students, as of Fall 2016:

Category I. English and Arabic Communication **9 cr.**

A. English Communication 6 cr.
- ENL 213 Sophomore Rhetoric 3 cr.

And
- ENL 223 Communication Arts 3 cr.

Or
- ENL 230 English in the Workplace 3 cr.

Or
- ENL 231 Work Ready Now 3 cr.

B. Arabic Communication (One from the following pool) 3 cr.
- ARB 211 Appreciation of Arabic Literature
- ARB 212 Advanced Arabic Grammar
- ARB 224 Arabic Literature and Human Thought
- ARB 231 Technical Arabic
- ARB 306 The Modern Arabic Novel and Short Story
- ARB 310 Arabic Theater

Category II. Religion **3 cr.**
- REG 212 Religion and Social Issues
- REG 213 Catholicism
- REG 215 World Religions
- REG 313 The Maronites: Faith and Cultural Heritage
- REG 314 Marriage and Family in the Catholic Church

Category III. Ethics **3 cr.**
- ARP 329 Ethics in Architecture and Design
- CSC 203 Information Age and Ethics
- COA 360 Media Ethics
- ENG 310 Ethics in Engineering
- ENS 205 Environment, Society and Ethics
- MGT 301 Ethics and Responsible Business
- NUR 203 Introduction to Bioethics
- PHL 311 Ethics and the Modern World
- POS 345 Ethics and Leadership

Category IV. Citizenship **3 cr.**
- ENS 202 The Environment and Sustainable Development
- FQM 200 Food Security and Sustainability
- POS 201 Introduction to Political Science
- POS 209 Citizenship
- POS 210 Government and Politics of Lebanon
- POS 240 Law and Society
- POS 319 Democracy and Human Rights

Category V. Cultural Studies and Social Sciences (6 credits)
Faculty Contributions

A. Cultural Studies
- ARP 215 Cultural Themes in Lebanese Architecture
- AVF 315 World Cinema Survey
- COA 350 Current Issues
- FAP 215 Art and Culture
- HIT 211 History of Lebanon and the Middle East
- HTM 201 Fundamentals of Hospitality and Cultural Tourism
- HTM 326 Lebanon's Culture, Heritage and Nature Tourism
- LIR 214 Introduction to Literary Genres
- LIR 217 American Literature to the End of the 19th Century
- LIR 305 Novel to the End of the 19th Century
- MUS 210 Music Appreciation
- NTR 215 Foods and Nutrition of World Cultures
- PHL 211 Logic and the Scientific Method
- PHL 232 Ancient World Philosophy
- PHL 333 Medieval World Philosophy
- PHL 334 Modern and Contemporary World Philosophy
- POS 225 Politics of Catholic Social Theory
- ROC 301 Romance Cultures

B. Social Science
- CSC 206 Games and Society
- ECN 211 Principles of Microeconomics
- ECN 212 Principles of Macroeconomics
- ENG 210 Introduction to Engineering Economy
- ENG 220 Engineering Innovation
- MGT 201 Fundamentals of Management
- MRK 201 Fundamentals of Marketing
- PSL 201 Introduction to Psychology
- SOL 201 Introduction to Sociology
- SOL 316 Society and Women
- SOL 322 Family: Sociological Perspectives
- SOL 323 Society and Role of Global Intercultural Communication
- SOL 313 Family Violence

Category VI. Applied and Life Sciences (6 credits)

A. Applied Science
- CSC 201 Introduction to Computers
- CSC 202 Computers for Visual Arts
- CSC 207 Navigating the Age of Artificial Intelligence
- ENG 250 Robotics and Society
- GIS 211 Principles of Geographical Information Sciences
- MAT 203 Everyday Math
- MIS 201 Management Information Systems

B. Life and Natural Sciences

AST	201	Discovering Astronomy
BIO	201	Your Body in Action
CHM	201	Chemistry in Everyday Life
ENS	201	Introduction to Environmental Science
ENS	203	Biodiversity
HEA	201	Health Awareness
HEA	204	Contemporary Health Issues
NTR	201	Basic Human Nutrition

DEPARTMENT OF ENGLISH AND TRANSLATION

ENGLISH LANGUAGE

TRANSLATION AND INTERPRETATION

ENGLISH LANGUAGE AND LITERATURE - LITERATURE EMPHASIS

ENGLISH LANGUAGE AND LITERATURE - APPLIED LINGUISTICS AND TEFL EMPHASIS

TRANSLATION

DEPARTMENT OF ENGLISH AND TRANSLATION

Professor: Jahshan, Paul

Associate Professors: Abdallah, Salma; El Hajj, Maya.

Assistant Professors: Abdelnour, George; Akl, May; Yazigy, Amal.

Senior Lecturers: Hajj, Michael; Karam, Mirna; Kopaly, Toni.

Lecturer: Geha, Natalia

INTENSIVE ENGLISH PROGRAM

Students whose score ranges between 40-49 on the NDU EET are offered the opportunity to take a one-semester 9-credit Intensive English course. Students enrolled in the program may also take one remedial course in Math and Arabic simultaneously. The passing grade in Intensive English is "D." Students who score a "B" or above are automatically placed in ENL 110. Students may repeat this course only once during their time at NDU.

Students are encouraged to participate in the University academic life by sitting in on regular classes in addition to the ones set by the program, and will have access to the Mariam and Youssef Library and the Writing Center.

Communication Skills Courses

The placement of students in Communication Skills Courses is based upon their EET scores (see Undergraduate Admissions).

The Department offers the following remedial and communication skills courses:

- ENL 105 - College English I (3 non-credit carrying; passing grade is "D");
- ENL 110 - College English II (3 non-credit carrying; passing grade is "D");
- ENL 213 - Sophomore English Rhetoric (3 cr.);
- ENL 223 - Communication Arts (3 cr.);
- ENL 230 - English in the Workplace (3 cr.);
- ENL 231 - Work Ready Now (3 cr.).

Languages

The Department offers courses in the following languages:
Chinese, French, German, Italian, Latin, Portuguese, Spanish, and Syriac.

THE DEGREE OF BACHELOR OF ARTS IN ENGLISH LANGUAGE

Mission

The mission of the BA in English Language is to provide students with mastery over the English language and a broad overview of English Literature. Students are prepared for future careers in teaching, communications, or for advanced degrees in the field of English studies.

Program Educational Objectives

The program will prepare students to:

- Develop their knowledge of English and its diverse cultural and literary forms;
- Become lifelong learners of English as an academic discipline;
- Acquire graduate degrees and pursue opportunities to build on their undergraduate training;
- Follow a successful career path by turning academic skills into professional competences;
- Use their training in interpretation and analysis to become lifelong critical thinkers in all their endeavors; and
- Construct a code of ethics to guide their professional and personal lives.

Program Learning Outcomes

Upon graduation, students should be able to:

- Describe the different stages of English literary history and the most well known works of English literature;
- Explain the structure of the English language as it has evolved over time through the use of linguistics as an academic discipline;
- Apply critical and interpretive methods to the study of language and literature;
- Understand the multiplicity of Anglophone dialects and literatures of the world; and
- Articulate how literary and cultural texts can transform one's understanding of oneself and others.

Graduation Requirements

Students majoring in English must successfully complete a total of 102 credits with an overall GPA of at least 2.0/4.0 and a minimum average of 2.0/4.0 in the major requirements. A minimum grade of "C" is required in ENL 213 and ENL 223 or ENL 230.

Degree Requirements (102 credits)

Liberal Arts Core Curriculum **30 cr.**

Core Requirements **48 cr.**
ENL 301, ENL 311, ENL 312, ENL 313, ENL 314, ENL 316, ENL 415, ENL 416, LIR 214, LIR 215, LIR 216, LIR 217, LIR 305, LIR 306, LIR 315, LIR 316.

Major Requirements from the following pool **15 cr.**
ENL 315, ENL 317, ENL 321, ENL 322, ENL 324, ENL 411, ENL 412, ENL 413, ENL 414, ENL 417, ENL 421, ENL 430, LIR 323, LIR 324, LIR 325, LIR 411, LIR 412, LIR 421, LIR 422, LIR 423, LIR 424, LIR 425, LIR 426, LIR 427, LIR 428, LIR 430.

Free Electives **9 cr.**

Minor in English (18 credits)

Students minoring in English must successfully complete a total of 18 credits with a minimum average of 2.0/4.0 in the minor courses. A minimum of "C" is required in ENL 213.

Option I: Language (18 cr.)

ENL 301
9 credits at the 300-level
6 credits at the 400-level

Option II: Literature (18 cr.)

LIR 214
3 credits at the 200-level
12 credits at the 300 and 400-levels

Undergraduate Courses: English

ENL 002 Intensive English II (9.0); 0 cr. Designed to improve the students' level of English and to prepare for University, this course emphasizes reading, writing, speaking, and grammar. The passing Grade is "D."

ENL 105 College English I (3.0); 3 cr. This course places emphasis on listening, speaking, reading, and writing skills that will enable students to succeed in other courses offered at NDU. The passing grade for this course (non-credit carrying) is "D."

ENL 110 College English II (3.0); 3 cr. This course bridges the gaps for those students who need to reinforce the basic skills taught in ENL 105 in order to succeed in sophomore-level University courses. Emphasis is on consolidating research techniques and further development of academic reading and writing skills. The passing grade for this course (non-credit carrying) is "D."

ENL 111 Public Speaking (3.0); 3 cr. This course introduces freshman students to the art of public speaking and communication in the English language. It emphasizes personal experience, informative, and persuasive speaking. The course also aims to prepare for a successful transition into academic life for freshmen.

ENL 213 Sophomore English Rhetoric (3.0); 3 cr. The course aims at developing the use of logic and reasoning in argumentation. A properly documented critical paper is required. *Prerequisite:* ENL 110 or placement.

ENL 223 Communication Arts (3.0); 3 cr. This course is designed to introduce the student to the art and science of speech making and communicating with others. *Corequisite:* ENL 213.

ENL 230 English in the Workplace (3.0); 3 cr. This course provides students with the practical technical skills required for professional communication. *Prerequisite:* ENL 213.

ENL 231 Work Ready Now (3.0); 3 cr. The Work Ready Now course is designed to provide students with foundational "soft skills" and work-based learning experiences to prepare them for success in the workplace. Work Ready Now is designed to facilitate participatory, hands-on teaching and learning. *Prerequisite:* ENL 213.

ENL 301 Introduction to the Study of Language (3.0); 3 cr. This course is an introduction to the study of language, its nature, structure, and development. *Corequisite:* ENL 213.

ENL 311 Phonetics (3.0); 3 cr. This course is a study of articulatory phonetics with emphasis on English sound systems. Practice in phonetic transcription will be conducted. *Corequisite:* ENL 301.

ENL 312 Morphology (3.0); 3 cr. This course focuses on word formation and the attempts to formulate a theory of word structure. *Corequisite:* ENL 301.

ENL 313 Syntax (3.0); 3 cr. This course is an analysis of phrase and sentence structure in English and their immediate constituents and types. *Corequisite:* ENL 312.

ENL 314 English Vocabulary (3.0); 3 cr. This course is a detailed study of meaning relationships, with a study of borrowings from other languages. *Corequisite:* ENL 312.

ENL 315 Transformational Grammar (3.0); 3 cr. This course involves students in solving exercises in a transformational generative syntax of English. Chomsky's grammar models are included. *Corequisite:* ENL 313.

ENL 316 Fundamentals of Discourse Analysis (3.0); 3 cr. This course aims at introducing students to the different

structural and communicative levels of discourse: textual organization (i.e. reference, cohesion, coherence, etc.), shared beliefs (i.e. presupposition, implicature, given new information structures, etc.), and conversational analysis (i.e. turn taking, interruptions, etc.). *Prerequisite:* ENL 301.

ENL 317 Language Acquisition Theories (3.0); 3 cr. This course studies the process by which language develops in humans. Theories concerning first language acquisition as well as second language acquisition are discussed.

ENL 321 Semiotics (3.0); 3 cr. This course is a study of the various patterns of bodily activities, and/or gestures, which different English speaking communities systematically use in order to communicate.

ENL 322 Language and Culture (3.0); 3 cr. This course is a study of cultural matter (i.e. customs, traditions, ways of thinking, taboos, etc.) which influence meaning in language use.

ENL 324 Creative Writing (3.0); 3 cr. This is a course in creative writing through practical experiment, discussion, and stylistic study of models. Students will practice various writing genres. *Corequisite:* ENL 213.

ENL 411 History of the English Language (3.0); 3 cr. This course is a study of the major phonological, syntactic, and lexical developments since the 9th century. *Corequisite:* ENL 314.

ENL 412 Phonology (3.0); 3 cr. This course studies phonological theory development. Emphasizes generative phonology of English. *Corequisite:* ENL 311.

ENL 413 Advanced English Grammar (3.0); 3 cr. This course is a study of English grammar as dealt with by the traditional grammarians. *Corequisite:* ENL 313.

ENL 414 Sociolinguistics I (3.0); 3 cr. This course treats language as a social phenomenon. Linguistic variations, social, and contextual factors are studied. *Corequisite:* ENL 314.

ENL 415 Applied Linguistics (3.0); 3 cr. This course studies the application of modern linguistics to teaching. Includes contrastive analysis between English and Arabic and error analysis. *Corequisite:* ENL 314.

ENL 416 Language Theories (3.0); 3 cr. This course studies the historical development of linguistic theory with a critical analysis of the competing theories of language. *Corequisite:* ENL 411.

ENL 417 Introduction to Critical Linguistics (3.0); 3 cr. This course looks at language from a functional systemic perspective. It utilizes linguistic techniques (i.e. tense, reference, deixis, transitivity, voice, theta roles, modality, etc.) in order to uncover implicit ideologies inherent in texts. Texts covered include scientific, religious, literary, political, and advertising texts. *Prerequisite:* ENL 301.

ENL 421 Varieties of English (3.0); 3 cr. This course is a systematic analysis of the major features/characteristics of the different styles of English (i.e. commercial, scientific, legal, etc.).

ENL 430 Special Topics in Linguistics (3.0); 3 cr. This course is an investigation of special topics of current interest in Linguistics. It may be repeated for credit with change of topic. *Prerequisite:* ENL 301.

ENL 500 Advanced English Review (3.0); 3 cr. This course is designed for entering graduate students in need of advanced English language practice. The course prepares students for graduate-level critical reading and writing regardless of discipline with intensive practice including focus on grammar, research, documentation, and other key information literacy skills.

Minor in French (15 Credits)

Students minoring in French must successfully complete a total of 15 credits with a minimum average of 2.0/4.0 in the minor courses. The required courses for the Minor in French are:

FRC	222	Sophomore French I	3 cr.
FRC	223	Sophomore French II	3 cr.
FRC	231	French for Business	3 cr.
FRC	235	Survey of Modern French Literature	3 cr.
FRC	236	Francophone Literature	3 cr.

Minor in Romance Languages (15 Credits)

Students minoring in Romance Languages must successfully complete a total of 15 credits with a minimum average of 2.0/4.0 in the minor courses.

The required courses for the Minor in Romance Languages are:

ROC	301	Romance Cultures	3 cr.
ROC	302	Special Topics in Romance Studies	3 cr.

In addition to 6 credits from the following courses:

ITL	201	Italian I	3 cr.
SPA	201	Spanish I	3 cr.
FRC	222	Sophomore French I	3 cr.
POR	201	Elementary Portuguese I	3 cr.
LTN	201	Latin I	3 cr.

Students who completed a freshman language course (ITL 101, SPA 101, FRC 101/105), are entitled to skip the 201 levels and choose the 202 levels directly.

In addition to 6 credits from the following courses:

ITL	202	Italian II	3 cr.
SPA	202	Spanish II	3 cr.
LTN	202	Latin II	3 cr.
POR	202	Elementary Portuguese II	3 cr.
FRC	223	Sophomore French II	3 cr.
ITL	203	Italian III	3 cr.
SPA	203	Spanish III	3 cr.
FRC	231	French for Business	3 cr.
FRC	235	Survey of Modern French Literature	3 cr.
FRC	236	Francophone Literature	3 cr.

Undergraduate Courses: Languages

CHI 201 Basic Chinese (3.0); 3 cr. This course introduces students to basic Chinese conversation. Students practice everyday situations and learn how to read elementary Chinese. At the end of the course students will be able to give oral summaries.

CHI 202 Intermediate Chinese (3.0); 3 cr. This course is a continuation of Chinese 201. Emphasis is on improving conversational Chinese in addition to reading and writing.

FRC 105 Freshman French I (3.0); 3 cr. This course introduces the student to basic spoken and written French. Students will practice conversation on subjects of a daily nature. They will read and write at an elementary level. This course is designed for students who have no previous knowledge of the French language. For beginners only.

FRC 110 Freshman French II (3.0); 3 cr. This is an intermediate-level course in which students will improve their ability to hold conversations in French. They will read and write on an intermediate level, write paragraphs, and summarizing and paraphrasing. *Prerequisite:* Placement test.

FRC 222 Sophomore French I (3.0); 3 cr. This course refines the students' ability to write in French. Critical analysis and argumentation will be practiced.

FRC 223 Sophomore French II (3.0); 3 cr. This course emphasizes fluency in French. Students will present both extemporaneous and prepared speeches.

FRC 231 French for Business (3.0); 3 cr. This course aims to prepare students with a French education to work in a career setting, which uses the French language as its language of correspondence and negotiation. Students will practice both oral skills of business presentations and the written skills of report writing, résumé preparation, and external and internal business correspondence. An aptitude test is obligatory before the Drop/Add Period.

FRC 235 Survey of Modern French Literature (3.0); 3 cr. This course offers an introduction to French literature of the modern period through the study of texts representative of key movements from the end of the 18th century to the present.

FRC 236 Francophone Literature (3.0); 3 cr. This course covers works written in the French language by writers outside France, from such diverse settings as Sub-Saharan Africa, the Caribbean, East Asia, and Lebanon. Special consideration will be given to Francophone writers from Lebanon.

GEM 201 German I (3.0); 3 cr. This course is based on practice in basic spoken German.

GEM 202 German II (3.0); 3 cr. This course is a continuation of GEM 201. Emphasis on writing and reading is given.

ITL 101 Introduction to Italian (3.0); 3 cr. This course introduces the students to basic spoken and written Italian. Students will practice conversation on subjects of daily interest. They will read and write at the elementary level. For Freshman students only.

ITL 201 Italian I (3.0); 3 cr. This course includes practice in basic spoken Italian.

ITL 202 Italian II (3.0); 3 cr. This course is a continuation of ITL 201. Emphasis on writing and reading is given.

ITL 203 Italian III (3.0); 3 cr. This course is a continuation of ITL 202. Students acquire a level of A2 competence in the Common European Framework of Reference for Languages.

LTN 201 Latin I (3.0); 3 cr. This course is an explanation of the different characteristics of the Latin language.

LTN 202 Latin II (3.0); 3 cr. This course is a continuation of LTN 201. Emphasis on writing and reading is given.

POR 201 Elementary Portuguese I (3.0); 3 cr. This course introduces students to the rudiments of the Portuguese language. The course equips students with the skills necessary to cope with a variety of day-to-day situations, including making personal introductions, asking for directions, expressing preferences, dealing with emergencies, among others.

POR 202 Elementary Portuguese II (3.0); 3 cr. This course is a further introduction to the study of the Portuguese language that started in POR 201. The course completes the survey of Portuguese grammar and lays the foundation for more advanced study of the language. Students continue to build their lexical base while applying more complex rules of the language including different past tenses and verbal modes. *Prerequisite:* POR 201 or Department approval.

SPA 101 Introduction to Spanish (3.0); 3 cr. This course introduces freshman students to the Spanish language and civilization. Students will practice speaking, reading, and writing, and emphasis will be placed on developing the ability to communicate with Spanish-speakers.

SPA 201 Spanish I (3.0); 3 cr. This course focuses on practice in basic spoken Spanish.

SPA 202 Spanish II (3.0); 3 cr. This course is the continuation of SPA 201. Emphasis on writing and reading is given.

SPA 203 Spanish III (3.0); 3 cr. This course is a continuation of SPA 202. Emphasis on reading, writing, and speaking skills.

SYR 201 Syriac I (3.0); 3 cr. This course introduces students to the Syriac Language.

ROC 301 Romance Cultures (3.0); 3 cr. This course is an exploration of the languages, literatures, and cultures of areas that speak Latin-based languages. This course connects language and literature with culture, history, and politics through interdisciplinary scholarship.

ROC 302 Special Topics in Romance Studies (3.0); 3 cr. This course is an exploration of the languages, literatures, and cultures of areas that speak Latin-based languages. This course offers an in-depth overview of selected topics and themes of Romance nature and origin.

Undergraduate Courses: Literature

LIR 101 Introduction to Literature in English (3.0); 3 cr. This introductory course is aimed at providing freshman students with an opportunity to appreciate literature and improve their English communication skills. Students will study significant literary genres, including fiction, poetry, and drama. Material covered will be representative of pre-Modern, Modern, and Post-Modern literature originally written in English, and will include Women's, Children's, and Minority literature.

LIR 214 Introduction to Literary Genres (3.0); 3 cr. This course introduces the essential genres of fiction, such as mythology, fables, epic poetry, folktales, biography, autobiography, mystery, fantasy, horror, science fiction, and others. *Corequisite:* ENL 213.

LIR 215 Introduction to Literary Criticism (3.0); 3 cr. This course presents the basic schools of literary theory from Plato to the rise of critical theory in the 20th century, to post-structuralism and beyond. *Corequisite:* ENL 213.

LIR 216 English Literature to the End of the 19th Century (3.0); 3 cr. This course surveys the literary currents and movements of poetry and prose, excluding fiction and drama, from the Anglo-Saxon period to the end of the 19th century. *Corequisite:* ENL 213.

LIR 217 American Literature to the End of the 19th Century (3.0); 3 cr. This course studies major American authors and movements from the Colonial period to the end of the 19th century. *Corequisite:* ENL 213.

LIR 305 Novel to the End of the 19th Century (3.0); 3 cr. This course covers the development of the British and American novel from its origins to the end of the 19th century.

LIR 306 Drama to the End of the 18th Century (3.0); 3 cr. This course studies the development of drama from its origins to the end of the 19th century. Selections will include major representative works.

LIR 315 Modern and Contemporary Novel (3.0); 3 cr. This course presents the major works of British and American novelists of the 20th century. Contemporary authors are emphasized.

LIR 316 Lebanese Writers (3.0); 3 cr. This course studies major Lebanese writers and their impact on both the East and the West with an emphasis on Lebanese immigrant literature.

LIR 323 Orientalism and 460 Studies (3.0); 3 cr. This course introduces Orientalism in Western literature and the arts, with an emphasis on British and American representations of the "Oriental."

LIR 324 Modern and Contemporary Poetry (3.0); 3 cr. This course presents the major works of British and American poets of the 20th and 21st centuries. Contemporary authors are emphasized.

LIR 325 Science Fiction (3.0); 3 cr. Envisioning the advances of science through the exercise of creative imagination, this course on science fiction traces the evolution of its dominant themes, metaphors, techniques, and its cultural significance. Material covered includes written text, film, and digital representations.

LIR 411 Shakespeare (3.0); 3 cr. This course studies the major works of William Shakespeare in the sociocultural context of his time.

LIR 412 Modern and Contemporary Drama (3.0); 3 cr. Presents the major works of British and American playwrights of the 20th and 21st centuries. Contemporary authors are emphasized. *Prerequisites:* LIR 214, LIR 215.

LIR 421 Modern and Contemporary Critical Theory (3.0); 3 cr. This course presents the major developments of modern and contemporary critical theory from its beginnings with Formalism, passing by New Criticism and Structuralism, to the latest developments in Post-Structuralist theory. Latest trends are stressed. *Prerequisites:* LIR 214 and LIR 215.

LIR 422 Urban Studies ["The City as Literary Artefact"] (3.0); 3 cr. This course studies the representation of the city as literary artefact based on literary and critical theory paradigms. *Corequisite:* LIR 421.

LIR 423 Film and Media Studies (3.0); 3 cr. This course presents the juncture between literary theory and the latest developments in film and media studies. *Prerequisites:* LIR 214, LIR 215.

LIR 424 Gender Studies (3.0); 3 cr. This course traces the themes of gender representation in literature through the prism of contemporary critical theory.

LIR 425 Women Writers (3.0); 3 cr. This course studies the ways female writers have contributed to, challenged, and reshaped the literary tradition. It traces women writers' choice of themes and genres, the relationship between expectations for women writers and readers and what women wrote, and the changing social role of the woman author writing for herself and for others across several centuries of cultural change.

LIR 426 World Literature (3.0); 3 cr. This course is a critical study of world masterpieces in translation.

LIR 427 Marketing Literature: The Best-Seller (3.0); 3 cr. Literature as marketed through various institutions such as book prizes, media advertising, reviews, and the role of critical assessment in the formation of canons and counter-canons are explored in connection with the phenomenon of the best-seller. Questions such as how and why best-sellers are produced, and how they influence and shape the existing narrative discourse are raised.

LIR 428 Travel Literature (3.0); 3 cr. This course explores the germination and development of travel writing and its influence on cross-cultural awareness, representations of discourse, landscape, and ethnicity, and movements across cultural landscapes through narratives embodied in novels, explorer journals, travelogues, and others.

LIR 430 Special Topics in Literature (3.0); 3 cr. This course explores particular authors, topics, and themes in depth. It may be repeated for credit with change of topic. *Prerequisites:* LIR 214, LIR 215.

TRANSLATION AND INTERPRETATION

THE DEGREE OF BACHELOR OF ARTS IN TRANSLATION AND INTERPRETATION

Mission

The mission of the BA in Translation and Interpretation is to prepare students to become expert translators and interpreters in order to meet present and future demands of the profession in the fields of law, economics, diplomacy, media, and the arts. The program provides intensive language training to students in English, Arabic, and French. English and Arabic are the principal languages of translation, with training in French as the third working language.

Program Educational Objectives

The program will prepare students to:

- Build on previous knowledge in order to develop advanced proficiency in English, French, and Arabic;
- Follow a successful career path that reflects their training and competences;
- Apply strategies and make decisions as translators in various contexts and across diverse professional fields;
- Contribute to their growth as practitioners through ongoing professional training; and
- Act ethically in their academic studies and later as professional translators and interpreters.

Learning Outcomes

Upon graduation, students should be able to:

- Describe the diverse schools of translation and the theories underlying them;
- Demonstrate fluency in at least two basic languages of the program, with advanced knowledge of the third (English, French, and Arabic);
- Apply leading principles of translation to diverse forms of discourse, including judicial, scientific, and literary, among others;
- Develop competence in the use of technology and software in the field of translation; and
- Analyze and research texts as precursor steps to sound translation and interpretation.

Students may choose to emphasize either Translation or Interpretation. Once admitted to the program students are required to develop competence in the three languages: English, Arabic, and French. Students may be required to take remedial courses in these languages in which a "C" or above is required.

Graduation Requirements

Students majoring in Translation and Interpretation must successfully complete a total of 108 credits with a minimum grade point average of 2.0/4.0 and a minimum average of 2.0/4.0 in the major requirements including the emphasis area.

Degree Requirements (108 credits)

Liberal Arts Core Curriculum	**30 cr.**
Core Requirements ENL 314, TRA 201, TRA 211, TRA 212, TRA 301, TRA 302, TRA 311, TRA 312, TRA 331, TRA 401, TRA 402, TRA 403, TRA 413, TRA 421, TRA 422, INT 431, FRC 223, ARB 302.	**55 cr.**
Translation Emphasis Requirements TRA 431, TRA 432, TRA 440, TRA 480.	**13 cr.**
Interpretation Emphasis Requirements INT 437, INT 438, INT 439, INT 440, INT 480 and 3 credits from the following: INT 432 or INT 433 or INT 434 or INT 435 or INT 436.	**16 cr.**
Free Electives	
Translation Emphasis	**10 cr.**
Interpretation Emphasis	**7 cr.**

Minor in Translation (16 credits)

Students minoring in Translation must successfully complete a total of 16 credits with a minimum average of 2.0/4.0 in the minor courses. Students in this minor would choose between two language options: Arabic/English or Arabic/French.

Option I: Arabic/English (16 cr.)

TRA 201	Translation Theory and Methodology	3 cr.
TRA 211	Translation of Contemporary Media Texts: English/ Arabic	3 cr.
TRA 301	Translation of United Nations Documents in English	4 cr.
TRA 331	Mechanical Translation and Interpretation	3 cr.
TRA 401	Translation of Economic Texts in English	3 cr.

Option II: Arabic/French (16 cr.)

TRA 201	Translation Theory and Methodology	3 cr.
TRA 212	Translation of Contemporary Media Texts: French/Arabic	3 cr.
TRA 302	Translation of United Nations Documents in French	4 cr.
TRA 331	Mechanical Translation	3 cr.
TRA 402	Translation of Economic Texts in French	3 cr.

Undergraduate Courses: Interpretation

INT 431 Interpreting: English-French-Arabic I (3.0); 3 cr. This course aims to help students develop competence in consecutive interpretation needed at international conferences. Students learn the principles of consecutive interpretation and practice basic skills. General themes are covered, and accuracy is emphasized. *Prerequisite:* TRA 421.

INT 432 Interpreting: English-French-Arabic II (3.0); 3 cr. This course aims to help students develop competence in consecutive interpretation needed at international conferences. Students practice basic skills. Themes related to the United Nations are covered. Accuracy is emphasized. *Prerequisite:* TRA 422.

INT 433 Interpreting: French-English I (3.0); 3 cr. This course aims to help students develop competence in simultaneous interpretation needed at international conferences. Students practice the basic skills needed for competence. Correct language is emphasized. General themes are covered. *Prerequisite:* INT 431 or INT 432.

INT 434 Interpreting: English-Arabic II (3.0); 3 cr. This course aims to help students develop competence in simultaneous interpretation needed at international conferences. Students practice on specialized texts in economics, political science, and humanities. *Prerequisite:* INT 431.

INT 435 Interpreting: French-Arabic II (3.0); 3 cr. This course aims to help students develop competence in simultaneous interpretation needed at international conferences. Students practice on technical texts. *Prerequisite:* INT 432.

INT 436 Interpreting: French-English II (3.0); 3 cr. This course aims to help students develop competence in simultaneous interpretation needed at international conferences. Students practice on technical texts. *Prerequisite:* INT 433.

INT 437 Interpreting: Arabic-English I (3.0); 3 cr. This course aims to help students develop competence in simultaneous interpretation needed at international conferences. Correct language is emphasized. General themes are covered. Accuracy is emphasized. Students spend time both in class and in the booth. *Prerequisite:* INT 431.

INT 438 Interpreting: Arabic-English II (3.0); 3 cr. This course aims to help students develop competence in simultaneous interpretation needed at international conferences. Students practice on specialized tests in economics, political science, humanities. Students spend time both in class and in the booth. *Prerequisite:* INT 437.

INT 439 Interpreting: English-Arabic III (3.0); 3 cr. This course aims to help students develop competence in simultaneous interpretation needed at international conferences. Technical texts are covered. Students spend time both in class and in the booth. *Prerequisite:* INT 434.

INT 440 Interpreting: Arabic-English III (3.0); 3 cr. This course aims to help students develop competence in simultaneous interpretation needed at international conferences. Technical texts are covered. Students spend time both in class and in the booth. *Corequisite:* INT 438.

INT 480 Interpreter Internship; (1.0); 1 cr. This course is based on practical training in a professional setting at conferences using simultaneous interpretation supervised by the instructor. *Prerequisite:* INT 433.

TRA 201 Translation Theory and Methodology (3.0); 3 cr. This course provides students with a firm foundation of both translation and methodology. Students will study the major contributors to translation theory and will practice translation using the various methodologies.

Undergraduate Courses: Translation

TRA 211 Translation of Contemporary Media Texts: English/Arabic (3.0); 3 cr. This course familiarizes students with different kinds of texts from the media pertaining to various aspects of current issues in English/Arabic combinations. *Prerequisite:* TRA 201.

TRA 212 Translation of Contemporary Media Texts: French/Arabic (3.0); 3 cr. This course familiarizes students with different kinds of texts from the media pertaining to various aspects of current issues in French/Arabic combination. *Prerequisite:* TRA 201.

TRA 301 Translation of United Nations Documents in English (3.2); 4 cr. This course develops competence in translating various types of United Nations (UN) documents covering the different areas of activity in English/Arabic combinations. Basic research and translation of data will be covered. Students will be exposed to the functions of diverse UN agencies. Guest speakers and field trips will be required. *Prerequisites:* TRA 211, ENL 213.

TRA 302 Translation of United Nations Documents in French (3.2); 4 cr. This course develops competence in translating various types of UN-related documents covering the different UN areas of activity in French/Arabic combinations. Basic research and translation of data will be covered. Students will be exposed to UN agencies. Guest speakers and field trips will be required. *Prerequisites:* TRA 212, FRC 223.

TRA 311 Translation of English Legal Documents (4.0); 4 cr. This course trains students in interpreting and translating English and Arabic texts, which cover diverse areas of law. English/American legal systems will be studied. Students will carry out basic comparative research on both systems. *Prerequisite:* TRA 301.

TRA 312 Translation of French Legal Documents (4.0); 4 cr. This course trains students in interpreting and translating French and Arabic texts, which cover diverse areas of law. Students will carry out basic comparative research on French and Lebanese systems of law. *Prerequisite:* TRA 302.

TRA 331 Mechanical Translation and Interpretation (3.0); 3 cr. This course focuses on the use of modern equipment in the field of translation and interpretation. *Prerequisites:* TRA 301, TRA 302.

TRA 401 Translation of Economic Texts in English (3.0); 3 cr. This course trains students in translating English and Arabic economic texts covering diverse fields of business, micro- and macroeconomics, finance, and banking. *Prerequisite:* TRA 301 or TRA 311.

TRA 402 Translation of Economic Texts in French (3.0); 3 cr. This course trains students in translating French and Arabic economic texts covering diverse fields of business, micro- and macroeconomics, finance, and banking. *Prerequisites:* TRA 302 or TRA 312, and FRC 223.

TRA 403 Seminar in French and English Translation (3.0); 3 cr. This course offers intensive practice in translating various types of texts from diverse contexts from English into French and vice versa. *Prerequisites:* ENL 213, FRC 223.

TRA 413 Multimedia Translation (2.0); 2 cr. This course focuses on the translation of the literature and language of motion pictures and television-related productions such as documentaries in English, French, and Arabic. Students will learn to use standard software required for subtitling. Field visits to television stations will be organized. *Prerequisites:* ENL 213, FRC 223.

TRA 421 Translation of English Literature (2.0); 2 cr. This course offers intensive practice in translating English literary and artistic texts into Arabic. *Prerequisite:* TRA 301.

TRA 422 Translation of French Literature (2.0); 2 cr. This course offers intensive practice in translating French literary and artistic texts into Arabic. *Prerequisite:* TRA 302.

TRA 431 Intercultural Communication and Translation I (4.0); 4 cr. This course focuses on the intricate and complex relationship between language and culture on the one hand, and cultural communication and translation on the other. The course equips students with the knowledge and practical tools needed to translate culturally specific texts in English/Arabic combinations. *Prerequisite:* TRA 421.

TRA 432 Intercultural Communication and Translation II (4.0); 4 cr. This course focuses on the intricate and complex relationship between language and culture on the one hand, and cultural communication and translation on the other. The course equips students with the knowledge and practical tools needed to translate culturally specific texts in French/Arabic combinations. *Prerequisite:* TRA 422.

TRA 440 Translation of Scientific and Medical Texts (4.0); 4 cr. This course trains students in translating English, French, and Arabic texts, which cover diverse areas of science and medicine. *Prerequisites:* TRA 401, TRA 402.

TRA 480 Translation Internship (1.0); 1 cr. This course offers practical training in a professional setting supervised by the instructor. *Corequisite:* TRA 422.

Minor in Arabic Language and Literature (15 credits)

In order to complete a minor in Arabic Language and Literature, students must take the two courses below:

ARB 212	Applied Arabic Grammar	3 cr.
ARB 231	Technical Arabic	3 cr.

Two from the following pool: (6 cr.)

ARB 211	Appreciation of Arabic Literature
ARB 224	Arabic Literature & Human Thought
ARB 317	Themes of Modern Arabic Literature in Lebanon (20th Century)
ARB 333	Modernism in Abbasid Poetry

One of the following courses: (3 cr.)

ARB 302	Practice in Uses of Arabic
ARB 423	The Evolution of the Critical Movement in Lebanon
ARB 415	The Arabic Modernization Movement

Undergraduate Courses: Arabic Language and Literature

ARB 101 Arabic Essay Reading and Writing I (3.0); 3 cr. This course concentrates on the essay, its development, and its various types and is offered for freshman students.

ARB 102 Arabic Essay Reading and Writing II (3.0); 3 cr. This course is a continuation of ARB 101 and is offered for freshman students. *Prerequisite:* ARB 101 or placement.

ARB 211 Appreciation of Arabic Literature (3.0); 3 cr. This course addresses essential characteristics of literature as well as literary themes, schools, and genres. *Prerequisite:* Sophomore Standing.

ARB 212 Advanced Arabic Grammar (3.0); 3 cr. This course is designed to improve students' command of Arabic grammatical structures and their application in discourse. *Prerequisite:* Sophomore Standing.

ARB 224 Arabic Literature and Human Thought (3.0); 3 cr. This course focuses on the relationship between philosophical thought of selected Arab and Lebanese writers and the philosophical concepts in Arabic literature from "Al Jahiliyah" until the present. Students will analyze and discuss the various philosophical views and theories in the passages studied.

ARB 231 Technical Arabic (3.0); 3 cr. Designed to train students in using proper Arabic linguistic tools pertaining to various technical, scientific, and professional settings. *Prerequisite:* Sophomore Standing.

ARB 302 Practice in Uses of Arabic (3.0); 3 cr. This course focuses on the use of the Arabic language. It provides insight into the connections and relations between various forms of specialized knowledge, and the full range of expressions that the Arabic language permits. Course includes advertising, journalism, and Radio/TV language varieties.

ARB 306 The Modern Arabic Novel and Short Story (3.0); 3 cr. The course is a theoretical and critical study of the modern Arabic novel and short story. The course utilizes descriptive and analytical approaches based on modern narrative theories and poetics.

ARB 310 Arabic Theatre (3.0); 3 cr. The course introduces students to the history of Arabic theater and its development. Students gain familiarity with representative plays from the history of Arabic theater while learning to analyze and criticize them. The course strengthens students' knowledge of standard Arabic through direct involvement in an Arabic theatrical production.

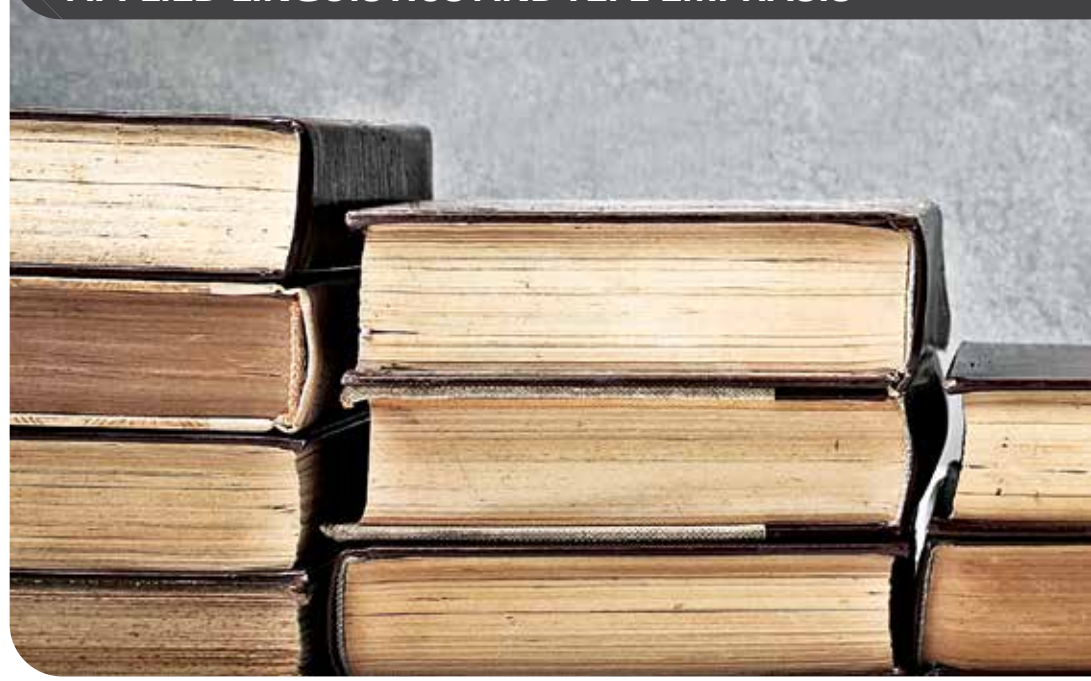
ARB 317 Themes of Modern Arabic Literature in Lebanon (20th Century) (3.0); 3 cr. This course focuses on cultural effects and literary evolution through selected texts.

ARB 333 Modernism in Abbasid Poetry (3.0); 3 cr. This course is based on the study of the evolution of poetry in the Abbasid era through selected texts. The renovation trend and its reflection on literature are also addressed. The Sho'ubian movement, Sufism, and their effect on philosophical thought and translations are highlighted.

ARB 415 The Arabic Modernization Movement (3.0); 3 cr. This course focuses on studies on the development of Arabic poetry in literature and criticism through selected texts.

ARB 423 The Evolution of the Critical Movement in Lebanon (3.0); 3 cr. This course is based on a study of the Lebanese contribution to Arabic criticism, trends of criticism in Lebanon in relation to Arabic criticism in the modern age, and the role of journalism in literary criticism.

ENGLISH LANGUAGE AND LITERATURE
- LITERATURE EMPHASIS
- APPLIED LINGUISTICS AND TEFL EMPHASIS



THE DEGREE OF MASTER OF ARTS IN ENGLISH LANGUAGE AND LITERATURE - LITERATURE EMPHASIS

Mission

The mission of the MA in English Language and Literature is to deepen students' knowledge of English literature and of the workings of the English language. Degree holders are equipped with the analytical and conceptual tools for further graduate study in English, or for a career in foreign language teaching, program administration, and communications.

Program Educational Objectives

The program will prepare students to:

- Deepen their knowledge of English literature and culture across time and place;
- Undertake complex analysis of written texts and other forms of discourse and identify the ways in which meaning is generated;
- Display critical, self-reflexive, and ethically-grounded thinking and judgment; and
- Pursue doctoral studies in a variety of fields that build on their knowledge of English studies.

Program Learning Outcomes

Upon graduation, students should be able to:

- Demonstrate specialized knowledge of the broad field of English literary studies, from canonical and non-canonical perspectives;
- Demonstrate a comprehensive understanding of, and ability to apply, diverse critical approaches to the study of literature;
- Analyze tensions in literary and cultural contexts;
- Apply key academic research techniques to writing and speaking successfully; and
- Analyze new, complex, and unpredictable texts that require a broad range of critical and analytical skills for understanding.

Graduation Requirements

To satisfy the requirements for the Master of Arts in English Language and Literature, with Literature Emphasis, students must complete 30 credits with an overall average of 3.0/4.0 including submitting and defending a thesis. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 "Cs" per program.

Degree Requirements (30 credits)

Major Requirements **15 cr.**

ENL 601, LIR 605, LIR 662, LIR 699.

Electives **15 cr.**

Students may select electives from the following:
LIR 604, LIR 608, LIR 609, LIR 610, LIR 613, LIR 616, LIR 617, LIR 618, LIR 619, LIR 620, LIR 626, LIR 627, LIR 629, LIR 630, LIR 635, LIR 636, LIR 637, LIR 640, LIR 682.

Graduate Courses: English Language and Literature - Literature Emphasis

LIR 604 Literature and War in the 20th and 21st Centuries (3.0); 3 cr. This course will explore contemporary literature that responds to and depicts war and violence including the World Wars, the Vietnam War, the Lebanese Civil War, the Palestinian/ Israeli crisis, and the Iraq War among others. The objective of this course is to explore the modalities of war and violence in a range of forms and contexts and the role they play in the construction/ reconstruction of subjectivities and narratives. Writers will include Kurt Vonnegut, Virginia Woolf, Tim O'Brien, Ghada Al-Samman, Nuha Al-Radi, René Girard, Elaine Scarry, and others.

LIR 605 Critical/Literary Theory (3.0); 3 cr. This is a major course that lays the ground for advanced interpretative studies and skills. Critical/Literary Theory addresses contemporary critical issues dealing with the ways in which literary texts are read in the context of an increasingly rich and complex multi-cultural and multi-disciplinary world.

LIR 608 Feminist Literary Criticism (3.0); 3 cr. This course will examine the ways in which developments in feminist criticism reflect trends in mainstream contemporary literature and culture. Topics studied may include Feminism and Colonialism, Feminism and Psychoanalysis, French Feminism, Marxist Feminism, and Eco-Feminism. Writers will include Hélène Cixous, Julia Kristeva, Judith Butler, Luce Irigaray, Donna Haraway, Caroline Marchant, and Simone de Beauvoir.

LIR 609 Postmodernism and Beyond: The Rise and Fall of Theory (3.0); 3 cr. Postmodernism has been hailed as one of the most significant transformations in the interpretative history of humanity. A body of principles and practices, known as "Theory," has stormed academia since the last quarter of the twentieth century. The most notable theoreticians of this peculiar interest have been centered mainly in Europe but also in the United States of America. Yet, at the beginning of the third millennium, voices have been raised against what is perceived as the hegemony of theory, and attempts are being made, on the one hand, to break the dictatorship of postmodernist thought and, on the other hand, to delineate the features of the new age. Theorists include J. Hillis Miller, Terry Eagleton, Fredric Jameson, Umberto Eco, and others.

LIR 610 Postcolonial Discontents (3.0); 3 cr. "What is English about English literature?" writes Salman Rushdie, effectively giving voice to a primary theme and preoccupation of postcolonial literary theory. In this course we will read both postcolonial theory and postcolonial literatures,so as to gain some appreciation of these forms of writing and critical inquiry. Novels include Maalouf's "An Imaginary Life," Harris' "Palace of the Peacock," Rhys' "Wide Sargasso Sea," Conrad's "Lord Jim," and Morrison's "Beloved."

LIR 613 Advanced Shakespearean Studies (3.0); 3 cr. This advanced course deals with the latest trends in Shakespearean studies and criticism, such as playwriting, theater, and performance.

LIR 616 Romantic Narrative Poetry: A Seminar (3.0); 3 cr. This course studies the Romantics' long narrative poetic works and explores narrative poetry as a reflection of the Romantics' concerns with fundamental topics that reflect the sociocultural age they lived in.. The course pays particular attention to long narrative poetry as a replacement for the epic. Texts include: Wordsworth's "The Prelude," "The Ruined Cottage," and "Michael," Coleridge's "Christabel" and "The Rime of the Ancient Mariner," Byron's "Don Juan" and "Childe Harold's Pilgrimage," Shelley's "Alastor" and "Epipsychidion," and Keats's "Endymion," "Isabella," and "Hyperion."

LIR 617 Identity Through Writing: Women Writers of the Arab World (3.0); 3 cr. This course will examine how Arab women have articulated and expressed their subjectivity, responded to cultural, social, political and familial demands, and created a literary and feminist aesthetic. Authors include Naomi Shihab Nye, Ahdaf Soueif, Evelyne Accad, Etel Adnan, Margot Badran, Fadia Faqir, and Diana Abu-Jaber.

LIR 618 Representations of the City in 20th-Century American Fiction (3.0); 3 cr. The city has been, since Theodore Dreiser's "Sister Carrie," one of the important loci of American fiction. As the city landscape developed, the relationship between city-dwellers and their urban practices has evolved and produced a narrative that attempts to fictionalize the experience of living and moving in the city, as well as inscribing the self in the frame of the emerging polis. Authors include Thomas Pynchon, Paul Auster, Don DeLillo, Steven Millhauser, E.L. Doctorow, and others.

LIR 619 Seductive Identifications (3.0); 3 cr. Multicultural or ethnic minority literature has come to be recognized as an important aspect of the cultural landscapes of Australia, Canada, and the United States. In this course, we will read both creative and critical literatures in English that define specific sites of multicultural engagement. "Birds of Passage," Haikal's "Seducing Mr. Maclean," Kureishi's "The Buddha of Suburbia," and the poetry of Antigone Kefala.

LIR 620 Lord Byron and the Orient: A Seminar (3.0); 3 cr. The course is an in-depth study of the Oriental peoples, cultures, traditions, sites, climes, themes, and colorings of Lord Byron's" Eastern Tales: The Bride of Abydos," "The Giaour," "The Corsair," and "Siege of Corinth." Short selections of other major works like "Lara," "Childe Harold's Pilgrimage," and "Don Juan," which allude to the Orient, will be studied as well. Students will investigate Byron's Oriental scholarship and his authenticity in representing the various elements of the East.

LIR 626 Visual Storytelling (3.0); 3 cr. An unexplored literary genre, the graphic novel provides a unique interplay of words and images whereby the narrative is relayed through words accompanied by illustrative art. The course will examine the link between visuality and narrativity and will focus on meaning, agency, representation, semiotics, and myth. Students will study the evolution of the genre, its structure, language, and impact on today's readers. Authors might include the Pulitzer-Prize winner Art Spiegelman, Raymond Briggs, R. Crumb, Marjane Satrapi, Paul Auster, Jean Baudrillard, Walter Benjamin, and Roland Barthes.

LIR 627 Re-Creations of the Industrialized Past and Visions of the Virtual Future: The Influence of Steampunk and Cyberpunk (3.0); 3 cr. The last two decades of the twentieth century have been marked by unprecedented advances in science, and fiction has been quick to incorporate the findings of what is called the "New Technologies" into its narrative representations of the nature of reality, society, and the individual. Recreated memories of an advanced past and visions of a dystopian future, and imagined virtual worlds challenging our notions of what reality is, have been the centerpiece of the two new genres of steampunk and cyberpunk. The works of Bruce Bethke, William Gibson, Bruce Sterling, Pat Cadigan, Neal Stephenson, Jeff Noon, Greg Bear, and others are included.

LIR 629 Ameen Rihani and Kahlil Gibran: A Seminar (3.0); 3 cr. This course studies the English works of Lebanese-American writers Kahlil Gibran, Ameen Rihani, and Mikhail Naimy and the sociocultural age they lived in.

LIR 630 Contemporary Voices in Exile (3.0); 3 cr. What is the relationship between exile and literary creativity? Does exile contribute to creative freedom or entrap the writer in nostalgia? Why do some writers choose to write in the language of their adopted country? The condition of exile has produced a distinctive literary voice where the dilemmas of language, identity, politics, and diaspora are examined. This course will examine the effects of such dilemmas on writers living and writing in exile. Authors may include Amin Maalouf, Hanif Kureishi, Andrea Levy, Miroslav Jancic, Samuel Beckett, Salman Rushdie, Etel Adnan, Vladimir Nabokov, and Chinua Achebe.

LIR 635 Out-Posting Empire (3.0); 3 cr. The works of Edward Said, Homi Bhabha, and Gayatri Spivak, among others, study postcolonial criticism of imperial culture. In this course, we will trace the trajectory of their works. Some of the themes covered are: critique of textualism, engagement with the work of Foucault, and intellectual vocation.

LIR 636 Western Images of the East (3.0); 3 cr. This course studies the major Western figures, literary ones, artists, travelers, scientists, explorers, and so on, who projected the image of the East in their literary and scholarly works and in their travelogues and documents. Students study particularly, but not exclusively, Orientalists, such as Sir William Jones, Simon Ockley, Sir Henry Hollad, Lady Mary Wortley Montagu, Sir Richard Burton, Godfrey Higgins, John Lewis Burckhardt, Eugene Delacroix, and others.

LIR 637 From Modernism to Postmodernism: Readings in 20th Century British and American Fiction (3.0); 3 cr. This course explores the ways in which British and American fiction have developed between the first and second halves of the twentieth century. The passage from modernism to postmodernism has been most obvious in literary discourse and the study of British and American narratives in these two periods will help not only understand this epochal shift in consciousness but will also place these narratives in their social and cultural frame. Authors include Anthony Burgess, John Fowles, Kurt Vonnegut, Norman Mailer, Thomas Pynchon, and others.

LIR 640 Selected Topics and/or Figures (3.0); 3 cr. This course aims at accommodating the students' particular research interests.

LIR 662 World Literature (3.0); 3 cr. This course examines the changing concepts of "world literature" through representative texts in translation.

LIR 682 Seminar in Selected Topics (3.0); 3 cr. This course focuses on an in-depth analysis of selected topics and themes as delineated in literature.

LIR 699 Thesis (6.0); 6 cr. The research for the master thesis must show student's proficiency in approved topics in literature.

LIR

THE DEGREE OF MASTER OF ARTS IN ENGLISH LANGUAGE AND LITERATURE - APPLIED LINGUISTICS AND TEFL EMPHASIS

Mission
The mission of the MA in English Language and Literature is to deepen students' knowledge of English literature and of the workings of the English language. Degree holders are equipped with the analytical and conceptual tools for further graduate study in English, or for a career in foreign language teaching, program administration, and communications.

Program Educational Objectives
The program will prepare students to:
- Develop an understanding of the process of foreign language acquisition and language learning;
- Build on their academic and professional experiences to make the link between linguistic theory and actual practice;
- Master pedagogical principles of course design, curriculum development, and language assessment in teaching English as a foreign language; and
- Become researchers and reflect on Applied Linguistics as an academic field of inquiry.

Program Learning Outcomes
Upon graduation, students should be able to:
- Apply leading theories of second language learning and acquisition;
- Analyze their academic and professional experiences in light of the theories and latest trends in the field of second language acquisition;
- Demonstrate the application of pedagogical skills in writing instructional objectives, effectively planning classroom instruction, developing teaching material, and assessing learning;
- Plan research studies, collect and analyze data, and draw theoretical and practical conclusions using appropriate tools and methods; and
- Construct a code of ethics to guide their professional and personal lives.

Admission Requirements
Preference is given to applicants with additional qualifications and professional experience ((i.e. teaching). Applicants must provide evidence of a high level of proficiency in English before their application can be considered; a minimum of 60 in the EET (English Entrance Test) is required for admission. For those who take the GRE (Graduate Record Exam), proof of a satisfactory performance is required.

Graduation Requirements
To satisfy the requirements for the MA in English Language and Literature, Applied Linguistics and TEFL emphasis, students must complete a total of 30 credits with an overall average of 3.0/4.0 including submitting and defending a thesis. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 "Cs" per program.

Major Requirements **24 cr.**
These consist of the following:
ENL 601, ENL 602, ENL 612, ENL 613, ENL 623, ENL 631, ENL 699.

Electives **6 cr.**
Students may select electives from the following:
ENL 611, ENL 621, ENL 622, ENL 624, ENL 632, ENL 633, ENL 641, EDU 681, EDU 682, EDU 683, EDU 684.

Graduate Courses: English Language and Literature
Applied Linguistics and TEFL Emphasis

ENL 601 Bibliography and Methodology of Research (3.0); 3 cr. This course studies the materials, tools, and methods of research.

ENL 602 Introduction to Applied Linguistics and Lang. (3.0); 3 cr. This course introduces the fundamental concepts of language learning and teaching.

ENL 603 Linguistics (3.0); 3 cr. This course is based on a study of major trends and methodologies in linguistics.

ENL 611 Analytical English Grammar (3.0); 3 cr. This course analyzes the problems of teaching grammar in light of current developments in the field.

ENL 612 Psycholinguistics (3.0); 3 cr. This course emphasizes learners' strategies L1 and L2 acquisition and motivation.

ENL 613 Sociolinguistics II (3.0); 3 cr. This course studies the links between sociolinguistic theory and L2 acquisition.

ENL 621 Arabic Linguistics and Sociolinguistics (3.0); 3 cr. This course emphasizes Arabic phonology, semantics, and syntax as well as language varieties in the Lebanese community.

ENL 622 Contrastive Analysis and Error Analysis (3.0); 3 cr. This course is a classroom-based study of L1 (Arabic) and L2 (English) along with detailed analysis of Lebanese learners' errors.

ENL 623 Language Teaching Methodology (3.0); 3 cr. This course relates language-teaching theory to teaching aural/oral reading and writing skills. *Corequisites:* ENL 612, ENL 613.

ENL 624 Discourse Analysis (3.0); 3 cr. This course emphasizes text analysis in order to produce relevant teaching material.

ENL 631 Measurement and Evaluation (3.0); 3 cr. This course investigates linguistic tests and measurements and emphasizes test evaluation.

ENL 632 Syllabus and Materials Design (3.0); 3 cr. This course studies syllabus design. EAP and ESP course designs are emphasized. *Corequisite:* ENL 623.

ENL 633 Data Processing in L2 Teaching (3.0); 3 cr. This course emphasizes the use and design of computer programming for L2 learning.

ENL 641 Field Methodology (3.0); 3 cr. This course considers the theory and practice of training teachers of English as a foreign or second language. *Prerequisite:* ENL 623.

ENL 699 Thesis (6.0); 6 cr. Research for the master's thesis must show the student's proficiency in approved topics in applied linguistics.

ENL

TRANSLATION

THE DEGREE OF MASTER OF ARTS IN TRANSLATION

Mission
The mission of the MA in Translation is to provide students with advanced training in preparation for employment in various translation fields. The program serves the needs and career goals of students and working professionals seeking to upgrade their knowledge in translation studies.

Program Educational Objectives
The program will prepare students to:
- Develop expertise in accurate translation and interpretation of texts from and/or to English, French, and Arabic;
- Become researchers, applying information literacy skills as a fundamental component of sound translation and interpretation;
- Pursue higher studies in a field commensurate with their knowledge of foreign languages and professional competences; and
- Demonstrate a commitment to ethical and professional conduct over a lifetime of professional practice.

Interpretation emphasis students will meet the United Nations requirement of 500 hours in the interpretation booth.

Program Learning Outcomes
Upon graduation, students should be able to:
- Apply advanced analytical skills to the translation and interpretation of written and oral texts;
- Produce near-native fluency in the use of the program's main languages of English, French, and Arabic;
- Construct a lexical glossary of technical and professional terms for ready translation in various areas such as law, economics, and media;
- Use software and technology as an aid to successful translation; and
- Apply ethical behavior in their academic and professional training as translators and interpreters.

Admission Requirements
MA candidates must pass a written language proficiency test in French and Arabic. A grade of 70 or above is required in both exams. In addition, an interview in English, French, and Arabic is required. If only a small deficiency in one of the three languages is detected, remedial courses will be required during the first semester. A "B" grade must be obtained in the remedial courses.

Students admitted with a BA other than in Translation must take TRA 201 and TRA 311 or TRA 401, during the first semester and earn a grade of "B" or higher.

Graduation Requirements
To satisfy the requirements for a Master of Arts in Translation/Interpretation, students must complete 36 credits inclusive of thesis for the Translation emphasis with an overall average of 3.0/4.0. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 "Cs" per program.

Degree Requirements (36 credits)

Translation Emphasis

Major Requirements **24 cr.**
TRA 610, TRA 620 or TRA 621, TRA 622, TRA 630, TRA 690, ENL 601.

Plus **8 credits** from the following pool:
TRA 631, TRA 632, TRA 633, TRA 634, TRA 635, TRA 636, TRA 637, TRA 638, TRA 639, TRA 640.

Electives **6 cr.**
Choose 2 from the following: ENL 611, LIR 605, LIR 662, IAF 641, IAF 621, IAF 605, INT 610, or any two 600 level courses.

Thesis **6 cr.**
TRA 699 Thesis.

Interpretation Emphasis
Major Requirements **30 cr.**
Complete the following required courses: TRA 621, INT 610, INT 620, INT 621, INT 622, INT 623, INT 624, INT 625, INT 626.

Electives **6 cr.**
Choose 2 of the following: TRA 610, TRA 620, TRA 622, TRA 630, ENL 611, LIR 605, LIR 662, or any two 600 level MGT, COA, or IAF courses.

Graduate Courses: Translation

INT 610 Consecutive and "A Vue" Translation Arabic-English-French (3.0); 3 cr. This is an advanced course with emphasis on language use.

INT 620 Conference I Arabic-English-French (4.0); 4 cr. This is an advanced course with emphasis on UN agencies, education, and development texts. Students will observe at conferences.

INT 621 Conference II Arabic-French (4.0); 4 cr. This course will focus on terminology and intensive practice in all aspects of medical translation and relevant scientific concepts.

INT 622 Conference III Arabic-English (4.0); 4 cr. This course will focus on terminology and intensive practice in science and technology related to Middle East development. Students will sit in silent booth at conferences.

INT 623 Consecutive II: English- Arabic/ Arabic-English (3.0); 3 cr. This course aims to help students develop competence in advanced consecutive interpretation needed in analytical documents and technical presentations. Correct language is emphasized. Technical themes are covered. Accuracy is emphasized. *Prerequisite:* INT 610.

INT 624 Consecutive III: French-Arabic-English (3.0); 3 cr. This course aims to help students develop competence in advanced consecutive interpretation needed in analytical documents and technical presentations. Correct language is emphasized. Technical themes are covered. Accuracy is emphasized. *Prerequisite:* INT 610.

INT 625 Conference IV: English-Arabic (3.0); 3 cr. This course aims to help students develop competence in simultaneous interpretation needed in general or specialized conferences (i.e. general texts, NGOs, environment, social, or legal texts). Students spend time both in class and in the booth. Technical texts are covered. *Prerequisite:* INT 620.

INT 626 Conference V: French-Arabic-English (3.0); 3 cr. This course aims to help students develop competence in simultaneous interpretation needed in general or specialized conferences (i.e. general texts, NGOs, environment, social, or legal texts). Students spend time both in class and in the booth. Technical texts are covered. *Prerequisite:* INT 620.

TRA 610 Advanced English Writing (3.0); 3 cr. This course covers fine points of English writing including: clarity, accuracy of style, proofreading, and revision. It is also a useful resource to develop practical writing skills to an advanced level. This course builds upon the skills acquired in "English Writing Skills" to further develop students' critical thinking and academic writing competencies. The course devotes a good part of the semester to the skills of writing summaries, critiques, syntheses, paraphrasing, and using quotations. It then leads students through the process of writing a research paper.

TRA 620 Linguistics for Translation Students (3.0); 3 cr. This course familiarizes students with the problems of linguistic specificity and translation. The nature and structure of language, its role in society, the theory and methods of linguistics, phonology, syntax, semantics and lexicon as applied in translation are emphasized.

TRA 621 Comparative Stylistics and Advanced Translation Theory (3.0); 3 cr. This course offers an in-depth analysis of the latest trends and theories in translation studies and their application to various texts related to inter-linguistic transfer. By including translation-oriented, contrastive grammatical and stylistic analysis of English, Arabic, and French, the course aims to enrich students' knowledge of the implementation of translation theories.

TRA 622 Terminology Arabic-English-French (3.0); 3 cr. This course focuses on the history of terminology, including the terminologist's task, terminology's research methods, and use of documentation. It also involves practical work in term research, subject field research, and intensive workshop approaches in treating English, French, and Arabic texts.

TRA 630 Computer Assisted Translation (3.0); 3 cr. This course focuses on computer aids for translation, desktop publishing, and terminology management as well as machine and machine-assisted translation. This course introduces students to Computer Assisted Translation (CAT), highlighting its success and failure in comparison to human translation. In the first part, the course trains the students in the practical use of the computer-assisted translation, focusing on the problems, difficulties, advantages, and shortcomings of this type of activity. In the second part, students are introduced to the latest translation softwares and how to use them. The advantages as well as the limitations of such programs are discussed with a special reference to the translation of scientific and literary texts.

TRA 631 Advanced Translation of Literature Arabic-English (3.0); 3 cr. This course is based on the study and analysis of translated works and the translation of a previously untranslated work into Arabic. We focus on how we read and understand literature, how reading and writing literature influence identity, meaning and value, and how to develop strategies for reading, discussing, and writing about literary works in order to translate literary work properly.

TRA 632 Advanced Translation of Literature Arabic-French (3.0); 3 cr. This course focuses on the study and analysis of translated works and the translation of a previously untranslated work into Arabic. We focus on how we read and understand literature, how reading and writing literature influence identity, meaning and value, and how to develop strategies for reading, discussing, and writing about literary works in order to translate literary work properly.

TRA 633 Advanced Legal Translation Arabic-English (2.0); 2 cr. This course is based on the translation of highly specialized legal texts. Students gain an introduction to the theory and practice of Legal Translation, including the legal knowledge needed to make well-founded choices while translating. Furthermore, they are aware of the challenges involved in this particular area of specialist translation. Finally, students improve their translation skills and are able to use appropriate terminology to discuss problems they encounter.

TRA 634 Advanced Legal Translation Arabic-French (2.0); 2 cr. This course covers the theory and practice of Legal Translation, including the legal knowledge needed to make well-founded choices while translating. This course aims to make students are aware of the challenges involved in this particular area of specialist translation.

TRA 635 Advanced Business & Economic Texts Arabic-English (2.0); 2 cr. This course covers the translation of highly specialized business, economic, and administrative texts. It familiarizes the student with current business practices (i.e. determining fees and negotiating contracts.)

TRA 636 Advanced Business & Economic Texts Arabic-French (2.0); 2 cr. This course is based on the translation of highly specialized business, economic, and administrative texts. It familiarizes the student with current business practices (i.e. determining fees and negotiating contracts.)

TRA 637 Advanced Medical Translation Arabic-French-English (2.0); 2 cr. This course is based on medical terminology and phraseology, which would allow the translator to correctly translate medical texts. Relevant basic scientific concepts will also be covered as well as practicing translation in areas such as medical, pharmaceutical, communications, and

science textbooks. Development of specialized glossaries in English, French, and Arabic will also be covered.

TRA 638 Advanced Translation of Media Arabic-English (2.0); 2 cr. This course covers the translation of various genres of media. It introduces students to the linguistic varieties used in various media. It aims to develop a reasonable command of the language of media. It also offers students the opportunity to develop an understanding of cultural differences between English and Arabic and how to tackle them when translating. Translation strategies and media skills are given a reasonable emphasis.

TRA 639 Advanced Translation of Media Arabic-French (2.0); 2 cr. This course covers the translation of various genres of media. It aims to provide students with a solid command of the language of different media, while offering them the opportunity to develop an understanding of cultural differences between French and Arabic and how to tackle them when translating.

TRA 640 Seminar in Selected Topics (3.0); 3 cr. This course offers an in-depth analysis of a selected topic or theme in Translation Studies. Topics include, but are not restricted to, Translation and Cognitive Science, Empirical Research in Translation Studies, Theories of Decision-Making in the Translation process, among others. *Prerequisite:* TRA 621.

TRA 690 Internship (1.0); 1 cr. This course is a supervised practicum designed to allow students to put their knowledge of translation and terminology to work in an actual translation service, mainly in a business firm, social service agency, or government office. Weekly discussions of specific texts and problems arising from the fieldwork experience will be conducted and supplementary written and laboratory assignments will be required.

TRA 699 Thesis (6.0); 6 cr. The research for an MA thesis must show the student's ability to do original research in one of the following areas of translation studies: terminology, lexicology-lexicography, or translation studies.

TRA

Summer Arabic Program

Program Objective
Making the Arabic language (colloquial, formal, and written) accessible to students in the most efficient and beneficial way possible.

Program Overview
This program engages students in the culture of contemporary Lebanon, one of the world's most dynamic countries. Participants study at Notre Dame University-Louaize (NDU), Lebanon, where the SAP program is set for teaching formal and colloquial Arabic at the preliminary, preparatory, intermediate, and advanced levels. Intensive personalized classroom instruction is supplemented by review sessions, individual tutorials, and daily practice with Lebanese conversation partners chosen mostly from NDU students and staff. Group excursions in Lebanon give students insight into Lebanese culture, society, and lifestyle, and provide students with opportunities to use their language skills with native speakers.

Program Duration
5 weeks.

N.B.: Credits acquired in the SAP Sessions are transferable.

Admission Requirements
Anyone who is interested in the program is kindly requested to submit the following documents:

- Application form (downloaded from website www.ndu.edu.lb under Summer Arabic Program - Faculty of Humanities);
- Official transcript of grades (if applicable);
- Arabic language teacher's recommendation (if applicable); and
- Writing sample from the most recent Arabic course (if applicable).

Courses: Summer Arabic Program (SAP)

The SAP is made up of 4 levels:

Level (Preliminary Arabic):

ARB 100 Emphasis A: The Formal Language; 3 cr. Designed to initiate non-Arabic-speaking students to the study of standard Arabic, the course aims at enabling foreign students to use and properly pronounce simple Arabic words and to listen, speak, read, and write simple sentences. This course also offers a preliminary approach to Arabic grammar. Beginners need not have any previous knowledge of Arabic.

ARB 104 Emphasis B: The Spoken (Colloquial) Language - The Lebanese Dialect; 3 cr. Emphasis in this course is placed on the elementary means of expression, the basics of pronunciation, and the knowledge of articulation. The course initiates speech and dialogue through audiovisual aids, periodic stays with families, programmed visits to industrial plants, shops, markets, cafes, and sight-seeing in groups or individually. Developing elementary vocabulary, learning proper pronunciation, getting the feel of the language are emphasized. No previous knowledge of Arabic is required.

Level II (Preparatory):

ARB 203 Emphasis A: The Formal Language; 3 cr. This course introduces basic vocabulary and sentence structure in standard Arabic, and focuses on developing basic skills of listening, speaking, reading, and writing simple sentences that are used frequently. Designed to help non-Arabic speaking students study standard Arabic, the course aims at enabling foreign students to use simple Arabic words and basic phrases, to listen, speak, use, and compose sentence structures, and to acquire the basics of Arabic grammar. *Prerequisite:* ARB 100 or equivalent.

ARB 202 Emphasis B: The Spoken (Colloquial) Language - The Lebanese Dialect; 3 cr. In this course, the emphasis is placed on the basic means of expression and the basics of pronunciation and articulation. It introduces the students to speech and dialogue, and to the description of facts and recounting of events through audiovisual aids, periodic stays with families, programmed visits to industrial plants, shops, markets, cafes, and sight-seeing in groups or individually, etc. Developing a basic vocabulary, learning proper pronunciation, getting the feel of the language are emphasized. *Prerequisite:* ARB 104 or equivalent.

Level III (Intermediate):

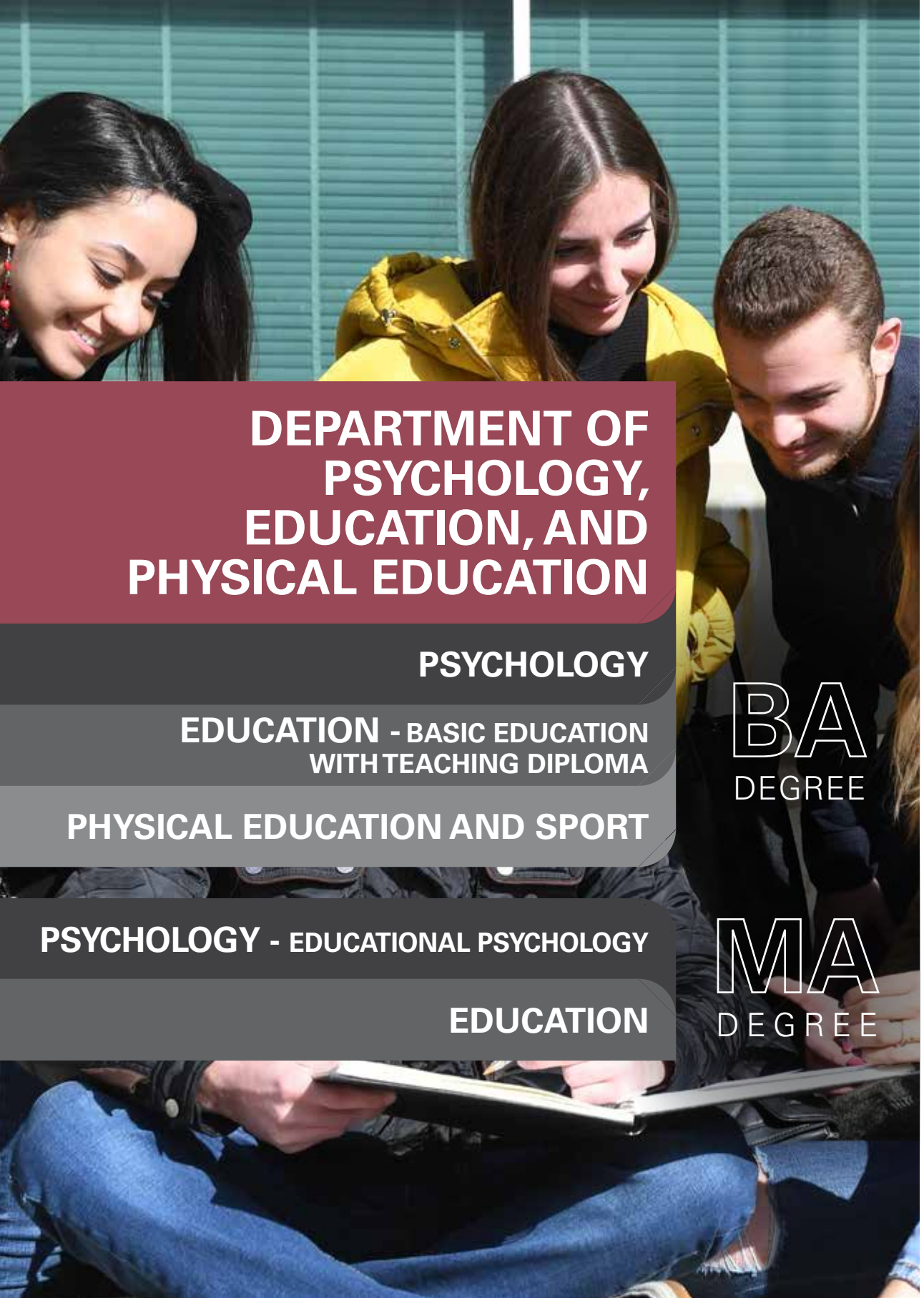
ARB 205 Emphasis A: The Formal Language; 3 cr. This course is designed to improve students' writing and reading skills through the following approaches: in-depth applied study of grammar and parsing, familiarity with figures speech and of style, and development of advanced skills in pronunciation. The course aims at improving the student's linguistic competence in preparation for further Arabic studies. *Prerequisite:* ARB 203 or equivalent.

ARB 204 Emphasis B: The Spoken (Colloquial) Language - The Lebanese Dialect; 3 cr. This course develops basic language skills used in day-to-day conversation. Exercises focus on structured practice in vocabulary, listening, and articulating. The content themes include: shopping, answering or making telephone calls, visiting a doctor, looking for a job, giving a present, attending wedding ceremonies, enjoying local cuisine, taking holidays, etc. Provides students with a rich package of selected vocabulary suitable for different occasions and helps students to adapt to social settings appropriate for different occasions. *Prerequisite:* ARB 202 or equivalent.

Level IV (Advanced Arabic):

ARB 225 Emphasis A: The Formal Language; 3 cr. This course focuses on further language skills in simple modern written styles through reading and writing together with improving fluency in oral communication. It includes the study of Arabic prose and poetry texts. Oral presentations and written reports are required. The aim of this course is to improve students' ability to read, write, and understand correct, simple, and practical modern Arabic. *Prerequisites:* The successful completion of Preparatory and Intermediate Arabic or their equivalents.

ARB 226 Emphasis B: The Spoken (Colloquial) Language - The Lebanese Dialect; 3 cr. In this course, the student will practice holding conversations on common daily concerns. The content themes include: shopping, answering or making telephone calls, visiting a doctor, looking for a job, giving a present, learning adequate behavior at social occasions (i.e. etiquette for weddings, birthday parties, regular daily visits, enjoying local cuisine, taking holidays, etc.) The aim of this course is to give students the opportunity to develop their communication skills in the spoken language in order to achieve spontaneity in speech and smooth social integration.



DEPARTMENT OF PSYCHOLOGY, EDUCATION, AND PHYSICAL EDUCATION

Professors: Abouchedid, Kamal; Sabieh, Christine.

Associate Professors: Chibani, Wissam; Keyrouz, Kaissar; Nassif, Nadim.

Assistant Professors: Abou Jawde, Simon; El-Hage, Zaher; Fares, Chirine; Oueijan, Harvey; Tannous, Joseph, (Fr.); Van Loan, Amira.

Senior Lecturer: Samrani, Diana

TEACHING DIPLOMA

The purpose of the Teaching Diploma program is to prepare schoolteachers. The program is designed to cater to both fresh graduates and teachers with some experience but lacking in scientific preparation.

Course material will cover the various aspects of teaching, regardless of the subject matter. Such aspects include general educational theories of acquisition, basic educational psychology, discipline and management in the classroom, testing and evaluating, and the different methods of the teaching-learning process.

Admission Requirements
To qualify for admission, a candidate must be working either towards a BA/BS, or hold a recognized BA/BS in any of the following subjects: English, Mathematics, Life Science, Physical Education, Chemistry, Physics, and Computer Science. All candidates must pass the EET with a minimum score of 60.

Recognition
The Government of Lebanon recognizes the Teaching Diploma as equivalent to the License d'Enseignement if the student holds the Lebanese Baccalaureate Part II and has successfully passed the 21 credits required for the Diploma over and above the total number of credits required for the BA/BS

Graduation Requirements
In order to obtain the Teaching Diploma, students must successfully pass 21 credits with a GPA of 2.0/4.0 or above in the following courses:

EDU 201 Introduction to Education
EDU 313 Psychology of Education: Learning

And 5 courses of the following:
EDU 343 Classroom Management
EDU 330 or 331 or 332 or 333 Curriculum Development and Evaluation
EDU 350 or 351 or 352 or 353 or 354 or 355 or 356 or 357 Methods of Teaching
EDU 430 or 431 or 432 or 433 or 434 or 438 Tests, Measurement and Evaluation

EDU 460 or 461 or 462 or 463 or 464 or 465 or 466 or 468 Teaching Practicum I
EDU 470 or 471 or 472 or 473 or 474 or 475 or 476 or 477 or 478 Teaching Practicum II

In addition, depending on their original BA, English, Mathematics, Life Science, Physical Education, Chemistry, Physics, and Information Technology, students must select an additional set of 3 courses suited to their discipline. NDU students may elect to begin their Teaching Diploma parallel to their degree program.

TEACHING DIPLOMA IN ARABIC LANGUAGE AND LITERATURE

The purpose of the Teaching Diploma program is to prepare schoolteachers.

The program is designed to cater to both the freshly out of school, inexperienced graduates, and teachers who have already had some experience but who lack scientific preparation.

The course material will cover the various aspects of teaching Arabic. Such aspects include general educational theories of acquisition, basic educational psychology, discipline and management in the classroom, testing and evaluating, and the different methods of the teaching-learning process.

Admission Requirements
To qualify for admission, a candidate must either be working towards a BA degree in Arabic or hold a recognized BA in Arabic.

Recognition
The Government of Lebanon recognizes the Teaching Diploma as equivalent to the License d'Enseignement if the student holds the Lebanese Baccalaureate Part II and has successfully passed the number of credits required for the Diploma over and above the total number of credits required for the BA in Arabic.

Graduation Requirements
In order to obtain the Teaching Diploma, students must successfully pass 21 credits with a GPA of 2.0/4.0 or above in the following courses:

EDU 202 Introduction to Education (in Arabic)
EDU 314 Educational Psychology (in Arabic)
EDU 315 Literary Criticism (in Arabic)
EDU 345 Methods of Teaching Arabic Language and Literature (in Arabic)
EDU 359 Curriculum Design (in Arabic)
EDU 414 Writing Styles and Textual Analysis (in Arabic)
EDU 477 Practicum in Teaching Arabic (in Arabic)

THE DEGREE OF BACHELOR OF ARTS IN PSYCHOLOGY

Mission
In line with the mission of NDU, the program of the BA in Psychology provides the basic Training in the scientific understanding of the human mind and behavior in its intrapersonal, Interpersonal, and social dimensions. Students acquire in-depth knowledge of the main theories, research, methods, and applications of psychology while developing scientific and critical thinking. The program can lead to several opportunities in public service, education, and the workplace that aim to enhance the functioning of individuals in their environment and prepares undergraduate students for graduate studies.

Program Educational Objectives
The program will prepare students to:
- Lead a productive career in their chosen concentration area;
- Apply their learned skills to analyze current issues in psychology and propose means of addressing them; and
- Work with professionals in organizations and various institutions that deal with various issues related to psychology.

Learning Outcomes
Upon graduation, students should be able to:
- Demonstrate knowledge of the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology;
- Apply basic research methods, including research design, data analysis, and interpretation;
- Use psychological and physiological principles to personal, social, and organizational issues; and
- Analyze the complexity of socio-cultural diversity and interpret resulting data.

The psychology program at NDU is specifically developed to promote the ability to deliver service skills within the community. At the BA level, students will not be qualified to function independently as practicing psychologists; however, they will be able to work in a community setting.

The program will train students to be aware of problems that exist and of the possible approaches to resolve them. Using psychological assessment, strategies, and methods of intervention, the student will work within the community, continuously evaluating the ways to generate better adjustment in relation to psychological, physical, social, political, and religious domains.

Admission Requirements
For students to be admitted to the program, a grade of "C" or above is required in the following courses: PSL 201, STA 202, ENL 213, ENL 223.

Graduation Requirements
In order to graduate, students must meet the requirements of the Liberal Arts Core Curriculum (LAC), and successfully complete a total of 97 credits with a minimum GPA of 2.0/4.0, and a minimum average of 2.0/4.0 in the major and concentration requirements.

Degree Requirements (97 credits)

Liberal Arts Core Curriculum **30 cr.**

- Psychology students must take 30 credits of LAC courses.
- Psychology students must take STA 202 to fulfill the 3-credit requirement in Science and Technology.

Major Requirements **36 cr.**

PSL 201, MAT 202, PSL 211, PSL 217, PSL 317, PSL 319, PSL 321, PSL 411, PSL 413, PSL 415, PSL 417, PSL 481.

Free Electives **1 cr.**

Concentration - Clinical **30 cr.**

PSL 310, PSL 315, PSL 213, PSL 230, PSL 382, PSL 484, PSL 215, PSL 345, PSL 320, PSL 323.

Concentration - Industrial **30 cr.**

PSL 322, MGT 201, PSL 362, PSL 323, PSL 332, MGT 317, PSL 386, PSL 215, HRM 427, PSL 424.

Concentration - Educational **30 cr.**

PSL 313, PSL 315, PSL 213, PSL 324, EDU 422, EDU 350, EDU 330 (EDU 331, EDU 332 or EDU 333), PSL 385, EDU 362, PSL 345.

Minor in Psychology (18 credits)

A minor in psychology is granted upon successful completion of 18 credit hours in psychology. The passing grade for each course is "C."

Students majoring in a bachelor degree and who have already passed Psychology 201 with a "C" are required to take 15 credits of Psychology from the courses listed below.

The program of the minor in Psychology consists of the six courses below:

PSL	201	Introduction to Psychology
PSL	211	Psychology of the Young Child
PSL	217	Personality Psychology
PSL	319	Abnormal Psychology
PSL	345	Counseling Psychology
PSL	481	Undergraduate Seminar in Psychology

Undergraduate Courses: Psychology

PSL 101 Principles of Psychology (3.0); 3 cr. This course introduces students to the basic concepts of psychology, and topics include learning, memory, motivation, and habits. It is offered for freshman students.

PSL 201 Introduction to Psychology (3.0); 3 cr. This course offers a critical survey of general topics, principles, and findings of modern psychology.

PSL 211 Psychology of the Young Child (3.0); 3 cr. This course covers the study of the individual from conception through the early school years. Emphasis is placed on the child between 3 and 5 years old.

PSL 213 Psychology of Learning (3.0); 3 cr. This course introduces various principles and theories of learning and memory. *Prerequisite:* PSL 201.

PSL 215 Social Psychology (3.0); 3 cr. This course explores the perceptions and attributions of social influences (e.g., prejudice, love, aggression, attitude, etc.) The construction of the Self in a social context is emphasized. *Prerequisite:* PSL 201.

PSL 217 Psychology of Personality (3.0); 3 cr. This course examines personality theories, methods, and applications to social and clinical concerns. Classic theories of personality are discussed including psychoanalytic, behavioral, trait, humanistic, and cognitive psychology. Social roles are explored and evaluated. *Prerequisite:* PSL 201.

PSL 230 Theories of Psychotherapy (3.0); 3 cr. This course places an emphasis on understanding the theories and techniques of psychotherapy. Topics considered will involve individual, family, and group therapy. *Prerequisite:* PSL 201.

PSL 310 Psychology of the Family (3.0); 3 cr. This course explores relations between the individual and the family within a community. Focus is placed on diverse family patterns due to social class, race, ethnicity, and gender within a historical and sociopolitical context. By examining epidemiological, cross-cultural, and clinical data, students are introduced to intervention techniques to reduce dysfunctional and/or abusive situations. *Prerequisite:* PSL 201.

PSL 313 Psychology of Adolescence (3.0); 3 cr. This course introduces theories and research on social, cognitive, sexual, and identity development in adolescence in order to promote a healthier adult. Implications within the community are a major focus. *Prerequisite:* PSL 201.

PSL 315 Sensation and Perception (3.0); 3 cr. This course examines the basic knowledge and theories concerning the central nervous system, mainly the brain, its functions, and disorders and relates them to the higher cognitive functions of the human being. The brain's functions are linked to psychological disorders and pharmacology. *Prerequisites:* PSL201, PSL 217.

PSL 317 Cognitive Psychology (3.0); 3 cr. This course addresses the current theoretical and experimental foundations concerning how humans acquire and use knowledge. Piaget, Bruner, and Vygotsky's theories of cognitive growth are studied. Topics discussed include the development of language, reasoning, problem solving, creativity, and intelligence. *Prerequisite:* PSL 201.

PSL 319 Abnormal Psychology (3.0); 3 cr. This course introduces factors behind abnormal behavior and resulting disorders. Emphasis is given on theories, etiology, classifications, and various modalities of treatments. *Prerequisites:* PSL 201, PSL 217.

PSL 320 Psychopathology (3.0); 3 cr. This course focuses on psychological and/or organic determinants of behavior disorders. *Prerequisite:* PSL 319.

PSL 321 Experimental Psychology (3.0); 3 cr. This course introduces the research process in psychology. Topics include methodology, data collection, descriptive statistics, analysis, and report writing. *Prerequisites:* STA 201, PSL 213 or PSL 317.

PSL 322 Industrial Psychology (3.0); 3 cr. This course applies a socio-psychological approach to an individual in a work setting. Topics discussed include management in an organization to promote productivity, change, role definition, and leadership qualities. *Prerequisite:* PSL 201.

PSL 323 Deviance (3.0); 3 cr. This course focuses on psychopathological behavior in its social context. Questions about normality and abnormality are studied, and topics covered include juvenile delinquency, rape, substance abuse, psychopathy, sociopathy, and sexual pathologies such as all the paraphilias (e.g., fetishism, exhibitionism, etc.). Forensic psychology and criminal profiling are also tackled. *Prerequisites:* PSL 201, PSL 217.

PSL 324 Educational Psychology (3.0); 3 cr. This course introduces basic principles of psychology applied to the field of education. Topics include learning and instruction, motivation, classroom management, and testing and evaluation. *Prerequisite:* PSL 201.

PSL 332 Personnel and Human Factors in the Work Community (3.0); 3 cr. This course addresses human capabilities, needs, and limitations within a system. Concentration on job analysis, satisfaction, testing, training, group dynamics, leadership and social influence, motivation, and equipment design. Consumer behavior and its effect on productivity and work quality within the community are examined. *Prerequisite:* PSL 322.

PSL 345 Counseling Psychology (3.0); 3 cr. Prevention of psychological crisis is the focus of the course. Practices of the various schools of psychology are explored such as behaviorism, psychoanalysis, phenomenology, rational emotive therapy, existentialism, and other contemporary theories. *Prerequisite:* PSL 217.

PSL 362 Psychology of Work and Law (3.0); 3 cr. This course provides an introduction to the application of psychological methodology and research on practical and applied problems. Areas concerned include marketing, advertising, management, and law. Psychological human factors serve as the background to this course. *Prerequisite:* PSL 201.

PSL 382 Practicum I: Clinical (1.4); 3 cr. This course provides students with supervised work experience within his or her concentration. Specific duties during the internship will be determined by the department and the institution supervisor. *Prerequisite:* Junior or Senior Standing.

PSL 385 Practicum I: Educational (1.4); 3 cr. This course provides students with supervised work experience within his/her concentration. Specific duties during the internship will be determined by the department and the institution supervisor. *Prerequisite:* Junior or Senior standing.

PSL 386 Practicum I: Industrial (1.4); 3 cr. This course provides students with supervised work experience within his or her concentration. Specific duties during the internship will be determined by the department and the institution supervisor. *Prerequisite:* Junior or Senior Standing.

PSL 411 Stress Causes, Consequences and Management (3.0); 3 cr. This course introduces the concept of stress in a bio-psycho-social approach. The impact of stress on the immune system are also covered including psycho-neuro-immunology, stress outcomes, and coping. *Prerequisite:* PSL 201.

PSL 413 History and Systems of Psychology (3.0); 3 cr. This course surveys the major schools of psychology and introduces the major psychologists and approaches within the field to give students an understanding of how psychology developed into a science. *Prerequisite:* PSL 201.

PSL 415 Intelligence Testing (3.0); 3 cr. This course allows the student to gain knowledge of the skills needed in administering, scoring, and interpreting intelligence tests. Test focus will be on WAIS for adults, WAIS for children, and the Stanford-Binet. *Prerequisites:* STA 202, PSL 211, PSL 317.

PSL 417 Personality Assessment (3.0); 3 cr. This course allows the students to gain knowledge of the skills needed to use the various instruments in assessing personality. Emphasis is on research and methodological steps in evaluating an individual's personality. *Prerequisites:* STA 202, PSL 217, PSL 319.

PSL 424 Community Psychology (3.0); 3 cr. This course concentrates on the interaction between individual and environment. Emphasis is placed on various models of intervention as they relate to both individual and community needs. Topics include poverty, prejudice, diversity, change, personal space, crowding, territoriality, and social stress. *Prerequisites:* PSL 215, PSL 322.

PSL 481 Undergraduate Seminar in Psychology (3.0); 3 cr. This course focuses on selected topics in psychology, varying from year to year depending on student, community and curriculum needs and on availability of professionals in relation to selected topics. Senior Standing.

PSL 484 Practicum II: Clinical (1.4); 3 cr. This course provides students with supervised work experience within his or her concentration. Specific duties during the internship will be determined by the department and the institution supervisor. *Prerequisite:* Junior or Senior Standing.

PSL 491 Special Topics in Psychology (3.0); 3 cr. This course is designed to be given to students either independently or in a group setting. Topic reading and research is supervised by a faculty member. *Prerequisites:* STA 202, PSL 321, Senior Standing.

EDUCATION - BASIC EDUCATION WITH TEACHING DIPLOMA

THE DEGREE OF BACHELOR OF ARTS IN EDUCATION - BASIC EDUCATION WITH TEACHING DIPLOMA

Mission

The mission of the BA in Education - Basic Education is to train students to lead a productive career in their chosen concentration area by educating them in the fundamental concepts of education.

Program Educational Objectives

The program will prepare students to:

- Lead a productive career in their chosen concentration area;
- Apply their learned skills to analyze current issues in education and propose means of addressing them;
- Contribute to the improvement of education practices and methodologies; and
- Work with educational professionals in organizations and government offices that deal with various educational issues.

Program Learning Outcomes

Upon graduation, students should be able to:

- Identify the foundations and basic elements of educational theory;
- Recognize and address issues related to student learning;
- Distinguish between the various learning styles for effective teaching;
- Apply managerial and pedagogical skills in class sessions;
- Demonstrate skills in working with students of varying abilities and special needs; and
- Plan culturally diverse learning activities.

The BA in Education - Basic Education focuses on preparing schoolteachers for Grade 1 to 9 to confront the issues of basic education. The official decree for this degree recognizes two separate degrees: a BA - Basic Education (99 credits) and a Teaching Diploma (21 credits).

Option I: For students who plan on a teaching career in Education - Basic Education (120 credits)

Graduation Requirements (120 credits)

Students must complete a total of 120 credits with a minimum overall GPA of 2.0/4.0 and a minimum average of 2.4/4.0 in the core and major requirements.

Liberal Arts Curriculum **30 cr.**

Core Requirements **54 cr.**
EDU 201, EDU 213, EDU 301, EDU 303, EDU 311, EDU 313, EDU 340, EDU 343, EDU 350, EDU 360, EDU 361, EDU 362, EDU 401, EDU 420,

EDU 430, EDU 460, EDU 470, ENL 311.

Major Requirements **18 cr.**
EDU 330.
Track 1 (English and Social Studies):
EDU 351, EDU 354, EDU 431, EDU 434, EDU 480, EDU 481, EDU 484.

Track 2 (Mathematics and Sciences):
EDU 352, EDU 353, EDU 432, EDU 433, EDU 480, EDU 482, EDU 483.

Major Electives **9 cr.**
Three courses from a pool:
EDU 322, EDU 342, EDU 344, EDU 412, EDU 413, EDU 422, ENL 322, MUE 335, MUE 446.

Free Electives **9 cr.**

Option II: For students who wish to acquire a BA in Education - Basic Education without a Teaching Diploma (99 credits)

Graduation Requirements (99 credits)

Students must complete a total of 99 credits with a minimum overall GPA of 2.0/4.0 and a minimum average of 2.4/4.0 in the core and major requirements.

Liberal Arts Curriculum **30 cr.**

Core Requirements **33 cr.**
EDU 201, EDU 301, EDU 303, EDU 311, EDU 313, EDU 340, EDU 343, EDU 350, EDU 361, EDU 362, EDU 430.

Major Requirements **18 cr.**
EDU 330.
Track 1 (English and Social Studies):
EDU 351, EDU 354, EDU 431, EDU 434, EDU 480, EDU 481, EDU 484.

Track 2 (Mathematics and Sciences):
EDU 352, EDU 353, EDU 432, EDU 433, EDU 480, EDU 482, EDU 483.

Major Electives **9 cr.**
Three courses from a pool:
EDU 321, EDU 322, EDU 344, EDU 412, EDU 422, ENL 322.

Free Electives **9 cr.**

Option III: For students who have obtained the 99-credit BA in Education - Basic Education and wish to acquire a Teaching Diploma (21 credits)

Courses **21 cr.**
EDU 213, EDU 311, EDU 360, EDU 401, EDU 420, EDU 460, EDU 470.

Undergraduate courses: Education

EDU 101 Education for life (3.0); 3 cr. As an introductory course in education, students will discuss and write about aims of education, curriculum development, learning and teaching, and assessment. Topics will also consider cultural, historical, and philosophical dimensions. Activities aim to promote critical thinking, reflection, and dialogue. For freshman students only.

EDU 201 Introduction to Education (3.0); 3 cr. This course introduces the history and philosophy of education, structure and components of the school, and the role of the teacher.

EDU 202 Introduction to Education (2.0); 2 cr. This course introduces the history and philosophy of education, structure and components of the school, and the role of the teacher. (In Arabic)

EDU 212 Sociological Perspectives on Schools (3.0); 3 cr. This course aims to give students a thorough understanding of pupils and current procedures in the classroom. *Corequisite:* EDU 201.

EDU 213 Human Growth and Development (3.0); 3 cr. This course introduces students to the field of developmental psychology and its influence on education. *Corequisite:* EDU 201.

EDU 203 Lebanese Arabic Sign Language I (3.0); 3 cr. This course introduces the student to basic Lebanese Arabic sign language communication. The history of sign language will be covered as well as the important aspects of hearing-impaired culture. Students will learn basic sign vocabulary, finger spelling, and numbers. Fluency in spoken Arabic language is required.

EDU 214Youth in Contemporary Society (3.0); 3 cr. This course aims at developing an awareness of the Lebanese adolescent society by focusing on psychological and social development of the adolescent. *Corequisite:* EDU 201.

EDU 301 Introduction to Arts Education (3.0); 3 cr. This course involves both a practical and a theoretical approach to dance, music, and visual art in the community. *Corequisite:* EDU 201.

EDU 302 Introduction to the Education of the Mentally Disabled (3.0); 3 cr. This course involves the diagnosis, classification, learning potential, and general characteristics of the disabled child. *Corequisite:* EDU 201.

EDU 303 Introduction to the Education of Students with Learning Disabilities (3.0); 3 cr. This course introduces the student to the indicators of learning disabilities and the means of diagnosing children with learning disabilities. Methods of teaching students with learning disabilities will be practiced. Strategies to include students with disabilities in mainstream elementary classrooms will also be examined. Observation of inclusive classrooms will be required. *Corequisite:* EDU 201.

EDU 311 Children's Literature (3.0); 3 cr. This course introduces criteria for selection of children's literature, children's reading interests and preparation of materials. *Corequisite:* EDU 201.

EDU 313 Psychology of Education: Learning (3.0); 3 cr. This course covers learning and its relation to growth and development. It also surveys the theories of learning and their pedagogical implications. *Corequisite:* EDU 201.

EDU 314 Educational Psychology (3.0); 3 cr. This course examines the interrelationship between education and psychology, presents the theoretical and practical perspectives of teaching, and compares the Western to the Arab theories and views. (In Arabic)

EDU 315 Literary Criticism (3.0); 3 cr. This course introduces a wide variety of literary disciplines and methods and applies these disciplines to selected ancient and modern texts. (In Arabic.)

EDU 322 Education of Talented and Gifted Students (3.0); 3 cr. This course offers theoretical background and practical concerns for educating exceptionally abled students. *Corequisite:* EDU 313.

EDU 323 Behavioral Problems of Exceptional Students (3.0); 3 cr. This course introduces teaching methods appropriate to the needs of students with emotional and behavioral problems. *Corequisite:* EDU 313.

EDU 324 Counseling in Special Education (3.0); 3 cr. This course presents approaches to working with exceptional individuals and their parents in the school, home and community. *Corequisite:* EDU 313.

EDU 325 The Needs of the Disabled (3.0); 3 cr. This course is designed to develop awareness of the educational needs of the disabled and the competencies to meet those needs. *Corequisite:* EDU 313.

EDU 330 Curriculum Development and Evaluation: Elementary (3.0); 3 cr. This course examines basic elements and foundations of a curriculum. Emphasis is given on the elementary level. *Corequisite:* EDU 313.

EDU 331 Curriculum Development and Evaluation: Secondary (3.0); 3 cr. This course is similar to EDU 330 but emphasizes the secondary level. *Corequisite:* EDU 313.

EDU 332 Curriculum Development and Evaluation: Early Childhood (3.0); 3 cr. This course is similar to EDU 330 but emphasizes early childhood. *Corequisite:* EDU 313.

EDU 333 Curriculum Development and Evaluation: the Disabled (3.0); 3 cr. This course is similar to EDU 330 but emphasizes students with learning disabilities. *Corequisite:* EDU 313

EDU 340 Teaching Reading Skills (3.0); 3 cr. This course focuses on the current philosophies and teaching approaches used to teach reading in the elementary school. Phonemic awareness, phonics instruction, vocabulary development, fluency, and comprehension will be emphasized as they are considered critical elements in the development of literacy. Students will also explore the methods of teaching reading of English to students from a bilingual or tri-lingual background. *Corequisite:* EDU 201.

EDU 341 Reading Skills for the Gifted (3.0); 3 cr. This course focuses on the special reading skills of gifted students. Current programs and teaching approaches are critically examined. *Corequisite:* EDU 313.

EDU 342 Instructional Strategies for the Disabled (3.0); 3 cr. This course provides techniques for teaching the disabled, such as basic stimulus control, positioning, eating, toilet training, etc. *Corequisite:* EDU 313.

EDU 343 Classroom Management (3.0); 3 cr. This course examines the role of the teacher in a classroom situation, namely teacher-student interaction and variations in class activities. *Corequisite:* EDU 201.

EDU 344 School Libraries (3.0); 3 cr. This course introduces library skills and provides students with ideas related to the structuring and enrichment of library material. *Corequisite:* EDU 201.

EDU 345 Methods of Teaching Arabic Language and Literature (3.0); 3 cr. This course examines the most recent methods of teaching Arabic. It aims to develop the teachers' abilities to motivate and inspire students. (In Arabic.)

EDU 350 Methods of Teaching: Elementary (3.0); 3 cr. This course provides principles and techniques of language, arithmetic, and science teaching in the elementary classes. *Corequisite:* EDU 313.

EDU 351 Methods of Teaching English as Foreign Language (3.0); 3 cr. This course is similar to EDU 350 but focuses on the teaching of the four language skills at various learning stages. *Corequisite:* EDU 313.

EDU 352 Methods of Teaching Mathematics (3.0); 3 cr. This course examines methods of teaching mathematics, namely educational objectives, mathematical logic, and teaching aids. *Corequisite:* EDU 313.

EDU 353 Methods of Teaching Science (3.0); 3 cr. This course examines methods of teaching science, namely educational objectives, basic concepts, lab skills, and teaching aids. *Corequisite:* EDU 313.

EDU 354 Methods of Teaching Social Studies (3.0); 3 cr. This course deals with different approaches to teaching history, geography, and civics. *Corequisite:* EDU 313.

EDU 355 Methods of Teaching: Early Childhood (3.0); 3 cr. This course covers methods and materials for the young child's learning: the use of manipulative and multi-sensory materials. *Corequisite:* EDU 313.

EDU 356 Methods of Teaching: The Handicapped (3.0); 3 cr. This course covers methods for handicapped students, namely curriculum needs, teaching techniques, and behavior management. *Corequisite:* EDU 313.

EDU 357 Methodology of Teaching: Learning Disabilities (3.0); 3 cr. This course introduces dimensions of learning disabilities, namely identification, characteristics, development, and habilitation. *Corequisite:* EDU 313.

EDU 358 Education for Peace (3.0); 3 cr. This course focuses on the educator's responsibility in educating for peace and appropriately integrating an understanding of peace into the Lebanese curriculum. Students will identify the premises and challenges of peace and education programs, with particular emphasis placed on Lebanese culture.

EDU 359 Curriculum Design (2.0); 2 cr. This course examines basic elements and foundations of the curriculum of Arabic language and literature in K-12 classes. (In Arabic)

EDU 360 Instructional Technology (3.0); 3 cr. This course covers the practical application of audio-visual materials, the operation and maintenance of equipment, and the construction of aids.

EDU 361 Applications of Computers in Teaching (3.0); 3 cr. This course covers the implications of computer application in the classroom. Students will learn software evaluation skills.

EDU 362 Education and the Lebanese Law (3.0); 3 cr. This course studies the various laws in the Lebanese Constitution that determine the educational process in Lebanon.

EDU 401 Intercultural Communication (3.0); 3 cr. This course introduces the comparative study of communication variables that influence interaction between persons of different social groups.

EDU 402 Foundations of Counseling Services (3.0); 3 cr. This course studies the philosophy, theory, organization, and administration of school and agency counseling services.

EDU 411 Early Childhood Education (3.0); 3 cr. This course investigates the significance of early childhood years (0-8) in the education of children. A comparative study is made of early childhood education in Lebanon.

EDU 412 Gender and Human Interaction (3.0); 3 cr. This course examines gender and communication and the relationship of gender to self-disclosure, self-assertion, listening, and empathy.

EDU 413 Early Childhood General Health, Nutrition and Safety (3.0); 3 cr. This course investigates effective techniques for dealing with health, safety, and nutrition in early childhood education.

EDU 414 Writing Styles and Textual Analysis (3.0); 3 cr. This course surveys a variety of writing styles. It aims to develop the students' ability to write and analyze texts based on content and style. (In Arabic)

EDU 420 Crisis Intervention (3.0); 3 cr. This course examines the crisis intervention services in community health, mental health, substances misuse, and child welfare.

EDU 421 Children at Risk (3.0); 3 cr. This course identifies potential risks to which children may be exposed. It also shows how the teacher, school, and community can cooperate with the child to foster a positive sense of worth and ability.

EDU 422 Learning and Behavioral Difficulties (3.0); 3 cr. This course presents adaptive teaching/learning procedures. It also prescribes instructional strategies and techniques.

EDU 430 Tests, Measurement and Evaluation: Elementary (3.0); 3 cr. This course critically examines the basic principles and techniques of testing and evaluation on the elementary level. *Corequisite:* EDU 350.

EDU 431 Tests, Measurement and Evaluation in English (3.0); 3 cr. This course is a critical examination of the basic principles and techniques of testing and evaluation in English. *Corequisite:* EDU 351.

EDU 432 Tests, Measurement and Evaluation in Mathematics (3.0); 3 cr. This course is similar to EDU 431 but relates to the testing of mathematics. *Corequisite:* EDU 352.

EDU 433 Tests, Measurement and Evaluation in Science (3.0); 3 cr. This course is similar to EDU 431 but relates to the testing of science subjects. *Corequisite:* EDU 353.

EDU 434 Tests, Measurement and Evaluation in Social Studies (3.0); 3 cr. This course is similar to EDU 431 but relates to the testing of social studies. *Corequisite:* EDU 354.

EDU 438 Tests, Measurement and Evaluation in Arabic (3.0); 3 cr. This course is similar to EDU 431 but relates to the testing of the Arabic language.

EDU 450 Law and the Disabled (3.0); 3 cr. This course discusses relevant laws pertaining to the disabled.

EDU 451 Clinical Assessment in the School (3.0); 3 cr. This course studies the nature of psychological tests, standardization procedures, and types of scales and scores.

EDU 460 Elementary Teaching Practicum I (1.4); 3 cr. This course is based on a guided and supervised practice in the application of elementary level teaching methods. Part I. *Corequisite:* EDU 430.

EDU 461 English Teaching Practicum I (1.4); 3 cr. This course is similar to EDU 460 but involves the teaching of English. Part I. *Corequisite:* EDU 431.

EDU 462 Mathematics Teaching Practicum I (1.4); 3 cr. This course is similar to EDU 460 but involves the teaching of mathematics. Part I. *Corequisite:* EDU 432.

EDU 463 Science Teaching Practicum I (1.4); 3 cr. This course is similar to EDU 460 but involves the teaching of science subjects. Part I. *Corequisite:* EDU 433.

EDU 464 Social Studies Teaching Practicum I (1.4); 3 cr. This course is similar to EDU 460 but involves the teaching of social studies. Part I. *Corequisite:* EDU 434.

EDU 465 Early Childhood Teaching Practicum I (1.4); 3 cr. This course is similar to EDU 460 but deals with teaching at the early childhood level. Part I. *Corequisite:* EDU 430.

EDU 466 Teaching of the Disabled Practicum I (1.4); 3 cr. This course is similar to EDU 460 but deals with the teaching of the disabled. Part I. *Corequisite:* EDU 356.

EDU 468 Arabic Teaching Practicum I (1.4); 3 cr. This course is similar to EDU 460 but involves the teaching of the Arabic language.

EDU 470 Elementary Teaching Practicum II (1.4); 3 cr. This course is similar to Similar to EDU 460 but covers Part II. *Corequisite:* EDU 460.

EDU 471 English Teaching Practicum II (1.4); 3 cr. This course is similar to EDU 461 but covers Part II. *Corequisite:* EDU 461.

EDU 472 Mathematics Teaching Practicum II (1.4); 3 cr. This course is similar to EDU 461 but covers Part II. *Corequisite:* EDU 462.

EDU 473 Science Teaching Practicum II (1.4); 3 cr. This course is similar to EDU 461 but covers Part II. *Corequisite:* EDU 463.

EDU 474 Social Studies Teaching Practicum II (1.4); 3 cr. This course is similar to EDU 461 but covers Part II. *Corequisite:* EDU 464.

EDU 475 Early Childhood Teaching Practicum II (1.4); 3 cr. This course is similar to EDU 461 but covers Part II. *Corequisite:* EDU 465.

EDU 476 Teaching of the Disabled Practicum II (1.4); 3 cr. This course is similar to EDU 461 but covers Part II. *Corequisite:* EDU 466.

EDU 477 Practicum in Teaching Arabic (3.0); 3 cr. This course aims to develop students' ability to develop lesson plans as well as follow them across all school levels. (In Arabic)

EDU 478 Arabic Teaching Practicum II (1.4); 3 cr. This course is similar to EDU 468 but covers Part II. *Corequisite:* EDU 468.

EDU 480 Elementary Teaching Internship (1.0); 1 cr. In this course, the student will choose a pedagogical issue, discuss its treatment/application in schools, and present a written report.

EDU 481 English Teaching Internship (1.0); 1 cr. This course is similar to EDU 480 but with emphasis on the teaching of English as a foreign language.

EDU 482 Mathematics Teaching Internship (1.0); 1 cr. This course is similar to EDU 480 but with emphasis on the teaching of mathematics.

EDU 483 Science Teaching Internship (1.0); 1 cr. This course is similar to EDU 480 but with emphasis on the teaching of science subjects.

EDU 484 Social Studies Teaching Internship (1.0); 1 cr. This course is similar to EDU 480 but with emphasis on the teaching of social studies.

EDU 485 Early Childhood Teaching Internship (1.0); 1 cr. This course is similar to EDU 480 but with emphasis on early childhood.

EDU 486 Teaching of the Disabled Internship (1.0); 1 cr. This course is similar to EDU 480 but with emphasis on the teaching of the handicapped.

EDU 487 Counseling and Guidance Internship (1.0); 1 cr. This course is similar to EDU 480 but with emphasis on counseling and guidance.

EDU 488 Arabic Teaching Internship (3.0); 3 cr. This course is similar to EDU 480 but with emphasis on the teaching of Arabic.

PHYSICAL EDUCATION AND SPORT

THE DEGREE OF BACHELOR OF ARTS IN PHYSICAL EDUCATION AND SPORT

Mission

The mission of the BA in Physical Education and Sport is to prepare students to pursue a career as teachers, coaches, or trainers by increasing their theoretical knowledge and by developing their practical skills in various sports activities.

Program Educational Objectives

The program will prepare students to:

- Lead a productive career in physical education and sports;
- Apply the theoretical and practical skills learned to the different sports curricula; and
- Participate in the development of a Lebanese sports culture.

Program Learning Outcomes

Upon graduation, students should be able to:

- Define the basic theoretical subjects of physical education and sports;
- Demonstrate evidence of expertise in various sports activities, including sports required in international baccalaureate programs;
- Employ a problem-based approach to motor performance and motor learning;
- Utilize basic research skills in the field of sports science;
- Apply skills and knowledge in the areas of first aid, CPR and personal safety;
- Develop a sense of community service;
- Analyze the application of scientific mechanisms to the field of sports; and
- Relate the application of social, economic, political, and psychological domains to the field of sports.

The BA in Physical Education and Sport is designed to meet the needs of those who plan on pursuing careers as teachers, coaches, or trainers. Students majoring in Physical Education and Sport must also study for their Teaching Diploma (TD) in Physical Education. The BA in Physical Education will increase students' theoretical knowledge, develop students' practical skills in various sports activities, including sports required in international baccalaureate programs, instill a commitment to health and fitness, and prepare students to practice their skills and compete in the job market.

- Students must either pass PES 321 before taking major elective courses or register concurrently in PES 321 and other major elective courses; and
- Courses are part lecture and part activity.

Graduation Requirements

To graduate, students must successfully complete a total of 99 credits with a minimum overall GPA of 2.0/4.0 and a minimum average of 2.0/4.0 in the core and major requirements. To obtain a Teaching Diploma, students must complete 21 credits over and above the BA requirements.

Degree Requirements (BA 99 credits)
(BA and T.D. 120 credits: Major courses 99 cr. and T.D. 21 cr.)

Liberal Arts Curriculum **30 cr.**

Core Requirements **33 cr.**
PES 204, PES 205, PES 250, PES 301, PES 321, PES 354, PES 358, PES 420, PES 421, PES 422, PES 426, PES 462, PES 492.

Major Electives **32 cr.**
6 courses from the following pool:
PES 326, PES 327, PES 328, PES 329, PES 330, PES 331, PES 332, PES 347.

10 courses from the following pool:
PES 322, PES 333, PES 334, PES 335, PES 336, PES 337, PES 338, PES 339, PES 340, PES 341, PES 342.

Free Electives **4 cr.**

Minor in Physical Education and Sport (15 credits)

Curriculum Requirements
Students enrolled in the Physical Education minor must complete **15 credits** of PES courses as follows:

PES 204	Foundations of Physical Education (3.0)	3 cr.
PES 321	Physical Exercise (2.0)	2 cr.

One 3-credit course

PES 301	Anatomical Kinesiology (3.0)	3 cr.
OR		
PES 358	Physiology of Exercise (3.0	3 cr.

One 3-credit course

PES 421	Coaching (3.0)	3 cr.
OR		
PES 422	Biomechanics (3.0)	3 cr.

One individual sports course from the following pool of courses (2.0); 2 cr.
PES 333 Swimming I, PES 322 Dancing, PES 335 Track and Field I, PES 336 Track and Field II, PES 337 Track and Field III, PES 329 Tennis, PES 330 Badminton, PES 331 Table Tennis, PES 332 Weight-Lifting, PES 338 Combat Sports I, PES 339 Combat Sports II, PES 340 Gymnastics I.

One team sports course from the following pool of courses (2.0); 2 cr.
PES 326 Basketball, PES 327 Volleyball, PES 328 Football, PES 347 Handball.

Undergraduate Courses: Physical Education and Sport

PES 204 Foundations of Physical Education (3.0); 3 cr. This course examines the historical, philosophical, and sociological foundations of sport and serves as an introduction to the physical education, exercise, and sport-related fields. The course will also incorporate contemporary trends and issues. This course should be taken during the first academic year.

PES 205 Physical Therapy & Athletic Injuries (3.0); 3 cr. The student will learn a wide variety of rehabilitation and physical therapy techniques in relation to injuries associated with sports activities, their prevention, and care. The material will also cover basic first aid and CPR.

PES 250 Motor Development & Motor Learning (3.0); 3 cr. This course explores specific principles of learning and the control of movement and motor skills. Students will also study the neurophysiological activation of muscles, reflexes, etc. during movement.

PES 301 Anatomical Kinesiology (3.0); 3 cr. This course is based on the understanding of human anatomy and basic mechanical principles related to efficient movement.

PES 310 Karate (1.0); 1 cr. This course covers basic skills, refereeing, and training in theory and practice.

PES 311 Basketball (1.0); 1 cr. This course covers basic rules, refereeing, and training in theory and practice.

PES 312 Volleyball (1.0); 1 cr. This course covers basic skills, refereeing, and training in theory and practice.

PES 313 Football (1.0); 1 cr. This course covers basic skills, refereeing, and training in theory and practice.

PES 314 Handball (1.0); 1 cr. This course covers basic skills, refereeing, and training in theory and practice.

PES 315 Tennis (1.0); 1 cr. This course covers basic skills, refereeing, and training in theory and practice.

PES 316 Racquet Sports (1.0); 1 cr. This course focuses on squash, table tennis, and badminton and covers basic skills, refereeing, and training in theory and practice.

PES 317 Tae-Kwon-Do (1.0); 1 cr. This course covers basic skills, refereeing, and training in theory and practice.

PES 318 Swimming (2.0); 2 cr. This course covers basic swimming strokes, diving, and swimming competitions.

PES 319 Judo (1.0); 1 cr. This course covers basic skills, refereeing, and training in theory and practice.

PES 320 Water-Polo (1.0); 1 cr. This course covers basic skills, refereeing, and training in theory and practice.

PES 321 Physical Exercise (2.0); 2 cr. This course focuses on aerobics, stretching, among others and covers basic skills, refereeing, and training in theory and practice.

PES 322 Dancing (2.0); 2 cr. This course covers beginner skills in classical and modern dance techniques.

PES 323 Weight-Lifting (1.0); 1 cr. This course covers basic skills, refereeing, and training in theory and practice.

PES 324 Track & Field (2.0); 2 cr. This course covers basic skills, refereeing, and training in theory and practice.

PES 325 Gymnastics (1.0); 1 cr. This course covers the fundamentals of various types of gymnastics for men and women (i.e. classical and rhythmic).

PES 326 Basketball (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching basketball, the rules, and refereeing. *Prerequisite:* PES 321.

PES 327 Volleyball (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching volleyball, the rules, and refereeing. *Prerequisite:* PES 321.

PES 328 Football (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching football, the rules, and refereeing. *Prerequisite:* PES 321.

PES 329 Tennis (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching tennis, the rules, and refereeing. *Prerequisite:* PES 321.

PES 330 Badminton (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching badminton, the rules, and refereeing. *Prerequisite:* PES 321.

PES 331 Table-Tennis (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching table tennis, the rules, and refereeing. *Prerequisite:* PES 321.

PES 332 Weight-Lifting (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching Weight-Lifting and the rules. *Prerequisite:* PES 321.

PES 333 Swimming I (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching the different strokes (i.e. freestyle, backstroke, crawl), the rules, and refereeing. *Prerequisite:* PES 321.

PES 334 Swimming II (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching the different strokes (i.e. breaststroke, butterfly), the rules, and refereeing. *Prerequisites:* PES 321, PES 333.

PES 335 Track and Field I (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching running (i.e. sprint, 100m, 200m, endurance, etc.), the rules, and refereeing. *Prerequisite:* PES 321.

PES 336 Track and Field II (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching jumping (i.e. long jump, high jump, etc.), the rules, and refereeing. *Prerequisite:* PES 335 and PES 321.

PES 337 Track and Field III (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching throwing (i.e. discus, shot-put, javelin, etc.), the rules, and refereeing. *Prerequisite:* PES 321.

PES 338 Combat Sports I (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching combat sports (i.e. Striking, Tae-Kwon-Do, Karate, etc.), the rules, and refereeing. *Prerequisite:* PES 321.

PES 339 Combat Sports II (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching combat sports (i.e. Grappling, Wrestling, Judo, etc.), the rules, and refereeing. *Prerequisite:* PES 321.

PES 340 Gymnastics I (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching gymnastics (i.e. floor techniques), the rules, and refereeing. *Prerequisite:* PES 321.

PES 341 Gymnastics II (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching gymnastics (i.e. apparatus techniques), the rules, and refereeing. *Prerequisites:* PES 321, PES 340.

PES 342 Winter Sports (2.0); 2 cr. Emphasis is placed on the development of fundamental skills and acquisition of techniques of teaching skiing and snowboarding. This is an accelerated course that will take place during the winter season over the course of a specific number of trips to ski resorts for intensive practical sessions. Priority is given to physical education majors. *Prerequisite:* PES 321.

PES 343 Pilates and Yoga (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of the fundamental skills of Pilates and yoga and the techniques of teaching them. Pilates will focus on increasing breathing capacity and improving postural alignment through simultaneous stretching and strengthening movements. Hatha yoga is a vigorous cardiovascular workout which increases strength, flexibility, balance, conditioning, and endurance.

PES 344 Cardio Fitness and Toning (2.0); 2 cr. This course is designed primarily for physical education majors. Emphasis is placed on the development of fundamental skills in cardiovascular workouts and acquisition of techniques of teaching. The course combines aerobic activities with muscle toning strength movements. Instruction will include the safe and effective use of fitness apparatus including bench step, physio balls, resistance bands and hand weights.

PES 345 Chess (1.0); 1 cr. This course is designed to help students engage in cognitive processing mechanisms, and accordingly develop competence in the logical thinking needed to play chess.

PES 346 Lifeguard Training (2.0); 2 cr. This course introduces and develops skills and knowledge necessary to prepare individuals for lifeguard responsibilities. It teaches students to prevent, recognize, and respond to aquatic-related emergencies. Teaching methodology includes lectures, demonstrations, and instructional videos with hands-on training and practice. *Prerequisite:* Students must pass a swimming test.

PES 347 Handball (2.0); 2 cr. This course will provide the basic skills of team handball including fundamental strategies and rules. The course is also designed to provide physical education students with teaching skills and methods necessary for the instruction of handball. For physical education majors. *Prerequisite:* PES 321.

PES 348 Basic Life Support and First Aid (2.0); 2 cr. This course trains students in Basic Life Support skills and first aid care according to International Red Cross standards. It combines lectures and demonstrations with hands-on training and practice. Focus will be on bone fractures, joint dislocations, ligament sprains, muscle strain, major wounds, burns, basic airway management, bleeding control, and spinal dislocation.

PES 354 Athletic Fitness Training (3.0); 3 cr. This comprehensive course is designed to provide the student with the knowledge and skills needed to develop fitness programs for competitive athletes in different sports. The course focuses on advanced topics in training the aerobic and anaerobic systems, developing strength and power, planning and periodization, in addition to topics in sports nutrition and exercise physiology.

PES 355 Methods in PE (3.0); 3 cr. This course covers planning, strategies, techniques, and methods of teaching PE.

PES 358 Physiology of Exercise (3.0); 3 cr. This course covers physiological changes that occur as a result of exercise and work.

PES 420 Theory of Fitness Coaching (3.0); 3 cr. This course incorporates the basic components of fitness and wellness in order to better understand human health and well-being. Students will learn to design, implement, and evaluate personal fitness and wellness programs. Topics covered will include incorporating exercise into every lifestyle, including youth, the elderly, and expecting mothers. In addition, nutrition, weight management, and stress management will be studied. The latest fitness and wellness research will also be analyzed and interpreted. *Prerequisite:* PES 358.

PES 421 Coaching (3.0); 3 cr. This course focuses on leadership, supervision, democracy, and behavior in sports as well as methods of coaching.

PES 422 Biomechanics (3.0); 3 cr. This course discusses improved teaching/coaching through biomechanical and anatomical analyses of sports and related activities.

PES 424 Therapeutic Use of Exercise (3.0); 3 cr. This course covers focuses on how to use exercise in physical therapy.

PES 426 Adapted Physical Fitness (3.0); 3 cr. This course is designed to promote knowledge and understanding of the needs and abilities of the special student in addition to the procedures and responsibilities of physical education for the special student. Emphasis will be placed on the development of methods to competently modify physical activities to suit students with various individual needs. *Corequisite:* PES 358.

PES 430 Evaluation of PE (3.0); 3 cr. This course covers the nature and use of a variety of tests as well as the needed practical application and interpretation of results.

PES 461 Teaching Practicum Elementary (3.0); 3 cr. This course covers the application of PE and sport methods in elementary schools.

PES 462 Teaching Practicum Secondary (1.4); 3 cr. This course covers the application of physical education and sport methods in secondary schools. It aims at preparing candidates to address the requirements, needs, and issues in the physical education of secondary school pupils. The course will provide hands-on experience and will be observed and evaluated by the course instructor. *Prerequisite:* PES 461.

PES 492 Internship (1.0); 1 cr. This course is based on a supervised and practical experience in teaching physical education activities or with approved professionals in select athletic training settings. Students must submit a final report. *Prerequisites:* Senior Standing and Department Chair approval.

PSYCHOLOGY - EDUCATIONAL PSYCHOLOGY

THE DEGREE OF MASTER OF ARTS IN PSYCHOLOGY - EDUCATIONAL PSYCHOLOGY

Mission

The mission of the MA in Psychology - Educational Psychology is to prepare students for postgraduate work. The program aims to apply psychological principles to the teaching/learning process. It also prepares graduates to analyze psychological effects of methods, resources, organization and non-school experience on the educational process.

Program Educational Objectives

The program will prepare students to:

- Pursue higher studies toward a doctoral degree;
- Carry out research in educational psychology to further their professional career;
- Pursue a career in institutions that deal with educational psychology;
- Further develop their professional status through the use of their learned skills in analytical and creative thinking, research, and the use of technology-based assessment; and
- Contribute to promoting educational psychology practices and strategies in their respective institutions.

Program Learning Outcomes

Upon graduation, students should be able to:

- Enroll in postgraduate programs;
- Implement Educational Psychology principles in their workplace;
- Contribute to educational research;
- Analyze the issues in current educational psychology practices;
- Demonstrate commitment to professional ethical conduct; and
- Measure student learning through appropriate assessment.

The program focuses on the application of psychology to the study of the behavior of individuals in the roles of teacher and learner, the nature and effects of learning environments, and the psychological effects of methods, resources, organization, and non-school experience on the educational process. It includes instruction in learning theory, human growth and development, research methods, and psychological evaluation.

Students accepted in the program must fulfill the 36 credit hours required or the 30 credit hours course work in addition to a 6 credit hours thesis. The GPA must remain at a "B" grade or 3.00/4.00. In case of failure in one of the courses, students are given one chance to repeat the course work. A second failure will result in expulsion from the program. Following registration, a 3-year time limit is given to the students to complete his or her degree. Students are not allowed to repeat more than two courses.

Admission Requirements
The minimum requirements for admission to the MA program in Educational Psychology are:

- A BA in Psychology or its equivalent from an accredited university. A BA in any other major will be evaluated separately;
- A cumulative undergraduate GPA of a minimum GPA 2.70, provided students satisfy the general admission requirements for graduate studies at NDU;
- A personal statement of background, goals, and values;
- Three professional recommendations from instructors of the student's BA program; and
- A personal interview at the discretion of the Department.

Graduation Requirements
To satisfy the requirements for a Master of Arts in Psychology, students must complete 36 credits, choosing either the Thesis track or the Non-thesis track, with an overall average of 3.0/4.0. The minimum passing grade of a graduate course is "C." Students in graduate studies must maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 "Cs" per program.

Transfer
Credits from accredited universities can be transferable according to the following conditions:

- Acceptance by the Admissions Office at NDU;
- Any course with a grade below 80, i.e. "B" is not transferable. This is in line with the NDU grading policy; and
- Only 9 credit hours are granted to the new student provided that the transferable course(s) is/are transferred from an accredited university and correspond(s) to the NDU course requirements.

Degree Requirements (36 credits)

Core Courses PSL 601, PSL 602, PSL 609.	**9 cr.**
Track Option PSL 699.	**6 cr.**
OR PSL 692 and PSL 695.	
Major Courses PSL 610, PSL 622, PSL 631, PSL 642, PSL 662, PSL 682.	**18 cr.**
Elective	**3 cr.**

Graduate Courses: Psychology

PSL 601 Professional Counseling Skills (3.0); 3 cr. The course provides practical experience in developing basic clinical skills, such as effective inquiry, empathic listening, helping responses, and interpretation. Emphasis is placed on matching therapist style with client characteristics. Students are trained to work with clients of diverse backgrounds and in different settings.

PSL 602 Assessment & Psychometric Methods (3.0); 3 cr. The course reviews the fundamentals of testing and assessment skills in administering and interpreting standardized tests in the areas of personality assessment and intelligence testing. Special emphasis will be on Rorschach, TAT, MMPI, WAIS-III, WISC-IIIR and Kauffman ABC.

PSL 609 Research Method and Designs (3.0); 3 cr. With the goal of gaining competence in critical evaluation of published research, this course will provide training in the application of research techniques to problems in psychology and human services. Quantitative and qualitative research design, conducting, reporting, and analyzing assessments, and program evaluation will be covered.

PSL 610 Developmental Psychology (3.0); 3 cr. The course studies the human lifespan development, a foundation for understanding principles and concepts of physical, cognitive, personality, emotional and social development from conception through death. It also introduces developmental disabilities.

PSL 622 Theory of Learning and Cognitive Processes (3.0); 3 cr. The course explores theoretical areas of learning and cognition, including cognitive psychology, memory, information processing, attention, problem solving, learning strategies, and reinforcing as well as the design of classroom learning situations.

PSL 631 Psychoeducational Assessment (3.0); 3 cr. The course focuses on administrating, scoring and interpreting standardized instruments and tests to assess cognitive abilities, learning behaviors, emotional disturbances, social maladaptive behavior, and sensory motor functioning of school-age children with an emphasis on psychoeducational diagnosis.

PSL 642 Practicum I (3.0); 3 cr. This course is based on the practical supervised experience in educational psychology (100 hours to be approved by the advisor).

PSL 662 Consultation, Intervention and Prevention (3.0); 3 cr. The course builds a framework for educational psychologists to address the concepts, processes, and issues related to the practice of school-based consultation as an intervention technique of educational psychologists.

PSL 682 Seminar in Educational Psychology (3.0); 3 cr. This course is a forum for students to put together knowledge and ideas across the sub-disciplines of psychology and an impetus for expansion of thinking. It includes but is not limited to socio development (i.e. issues relating to education), topics such as role theory, attitude theory formation, and change, transitions from home to school, elementary to secondary, and high school to university to work, instructional psychology (i.e. designing, implementing, and evaluating learning strategies and programs from preschool to high school), instructional decision-making (i.e. direct and indirect approaches to interact and help students, teachers, and families to reduce behavioral and academic problems), assisting students with developmental disabilities, contemporary educational problems and motivation, and developing human potentials (i.e. techniques that emphasize human relation skills, self-image, values, and stress management).

PSL 692 Internship I (3.0); 3 cr. This course is based on an internship in educational psychology (150 hours) which needs to be approved by the advisor.

PSL 695 Internship II (3.0); 3 cr. Educational psychology (150 hours) to be approved by the advisor.

PSL 699 Thesis (6.0); 6 cr. This course is based on a thesis that needs to be approved by the advisor.

PSL

EDUCATION

THE DEGREE OF MASTER OF ARTS IN EDUCATION

Mission
The mission of the MA in Education is to prepare students for postgraduate work. The program aims to present graduates with a knowledge base in school leadership, technology of education, or special needs.

Program Educational Objectives
The program will prepare students to:
- Pursue higher studies toward a doctoral degree;
- Carry out research in their fields and/or concentration areas to further their professional career;
- Pursue a career in upper-level positions in organizations and government offices that deal with education and educational issues;
- Further develop their professional status through the use of their learned skills in analytical and creative thinking, research, and the use of technology in pedagogy; and
- Evaluate proposed strategies in the field of education and pedagogy.

Program Learning Outcomes
Upon graduation, students should be able to:
- Enroll in postgraduate programs;
- Implement the contemporary theories of education to their careers;
- Contribute to educational research;
- Demonstrate advanced understanding of learning theory and methodologies;
- Analyze the issues in current education practices in Lebanon and the region; and
- Demonstrate commitment to professional ethical conduct.

Admission Requirements
Candidates are expected to have completed a BA in Education, or BA with a Teaching Diploma from an accredited university. Candidates holding the degree of Bachelor of Arts or Sciences in a related field from an accredited university will be considered on an individual basis, pending the decision of the Department concerning special admission conditions.

Graduation Requirements
To satisfy the requirements for the degree of MA in Education, the student must complete a total of 33 credits with an overall average of 3.0/4.0, inclusive of a thesis. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 "Cs" per program.

Degree Requirements (33 credits)

Major Requirements **15 cr.**
Complete the following required courses:
EDU 610, EDU 611, EDU 622, EDU 699.

Electives **9 cr.**
Three out of the following courses:
EDU 612, EDU 614, EDU 621, EDU 623, EDU 624.

Concentration Areas: **9 cr.**

1. Special Education: The Special Education concentration prepares educators to work with students with special needs. The program emphasizes interaction between students, teachers, and school administrations.

Three from the following courses:
EDU 641, EDU 642, EDU 643, EDU 644.

2. School Management and Educational Leadership: Educators who wish to pursue a career in school administration will be exposed to the best practices in policy-making, leadership skills, law, and methodology.

Three from the following courses:
EDU 651, EDU 652, EDU 653, EDU 654.

3. Educational Technology: Educators interested in applying modern technology to the classroom will benefit from this concentration. Courses focus on practical application of technology to enhance student learning.

Three from the following courses:
EDU 661, EDU 662, EDU 663, EDU 664.

Graduate Courses: Education

EDU 610 Educational Research Methods (3.0); 3 cr. This course presents key concepts and issues in statistics and their use in educational research, including descriptive and inferential research. Both qualitative and quantitative research methodologies will be explored in relation to improving educational programs. Particular emphasis will be placed on developing skills in applying research to educational decision-making, including conducting needs assessment and analyzing, interpreting, and communicating educational data.

EDU 611 Educational Models and Curriculum Design (3.0); 3 cr. This course introduces procedures and plans that incorporate social, political, economic, intellectual, and other values in determining what to include in a curriculum. It also examines the question concerning the nature and history of the curriculum concept by looking at both the content and pedagogy of important curriculums employed in the ancient and medieval worlds.

EDU 612 Ethics and Politics in Education (3.0); 3 cr. This course addresses the tensions that exist in education between the realms of politics and ethics. It examines concepts of power and communication especially as they relate to pressure groups and advisory bodies. The course seeks to overcome this tension by helping students to understand how it is possible to be both ethically and politically astute at the same time. *Corequisite:* EDU 610.

EDU 614 Technology and Education (3.0); 3 cr. This course emphasizes the impact of technology on the total school environment. Students critically analyze the role of technology in instruction and develop strategies for infusing technological resources into the curriculum and the classroom to improve the teaching-learning process. *Corequisite:* EDU 610.

EDU 621 Advanced Educational Psychology (3.0); 3 cr. This course presents an in-depth study in advanced psychological theories of learning and the relationship between the theories and instructional strategies. *Corequisite:* EDU 610.

EDU 622 Comparative Education (3.0); 3 cr. This course analyses educational systems as related to values and cultures, and compares the Lebanese educational system to other Arab, European, and American systems.

EDU 623 Advanced Educational Measurement (3.0); 3 cr. This course provides an advanced theoretical and practical training in techniques of test construction, evaluation and standardization, validation, reliability, item analysis, norm setting, criterion referencing, and the selection and interpretation of standardized tests. *Corequisite:* EDU 610.

EDU 624 Advanced Methodology (3.0); 3 cr. This course presents an in-depth analysis of current methods and techniques of instruction. *Corequisite:* EDU 610.

EDU 641 Special Education: Issues and Trends (3.0); 3 cr. This course attempts to define both the concept and practice of special education by examining its history and evolution in education. It analyzes the contemporary issues and trends in special education and critically examines many of its major categories.

EDU 642 Special Education: Assessment and Treatment (3.0); 3 cr. This course focuses on traditional and contemporary methods of assessment and treatment as related to the standard categories of special education.

EDU 643 Motivation in Special Education (3.0); 3 cr. This course examines motivational strategies that help to improve self-image and that enhance learning and the desire to achieve.

EDU 644 The Special Student and The Regular Classroom (3.0); 3 cr. This course studies ways of providing foundations for educational partnerships between regular and special educators/students. Examines some of the most recent and innovative methods used to meet the needs of special students.

EDU 651 Leadership for School Improvement (3.0); 3 cr. This course defines leadership skills and abilities and develops the dynamics of team functioning, decision-making, problem solving, communicating, and self-improvement.

EDU 652 Instructional Management and its Evaluation (3.0); 3 cr. This course studies the management and evaluation of instruction and emphasizes the use of systemic management and evaluation models by teachers.

EDU 653 Administrative Leadership Skills (3.0); 3 cr. This course studies the theory of leadership in the different contexts of public and private schools.

EDU 654 School Business Management and Facilities (3.0); 3 cr. This course presents guiding principles for developing financial programs. Studies sources of revenue and the management of school funds and facilities.

EDU 661 Technology-Oriented Instructional Materials (3.0); 3 cr. This course examines the production of instructional materials using technology as a tool. It uses basic and advanced techniques, materials and mechanics to accomplish such production.

EDU 662 Issues and Implications of Telecommunications in Education (3.0); 3 cr. This course focuses on creating virtual entities, developing a sense of community using online tools, and developing communication infrastructure. Looks into how new technologies affect pupils in the school, the home, and the future job market. Studies the computer as a communication tool, whether online or offline, and looks into the advantages and disadvantages of utilizing this tool in the modern classroom.

EDU 663 Developing Multimedia Productions (3.0); 3 cr. This course presents elements of instructional design and storyboarding techniques to translate instruction into various types of multimedia presentation. Improves skills, knowledge, and creativity used in video production. Assists students to plan, write, produce, and edit educational and informational productions. Students discuss the potential limitations and techniques for effectively using the television, radio, distance learning, telecommunications, and interactive videos.

EDU 664 Information Retrieval Through Technology (3.0); 3 cr. This course develops search strategies and uses information retrieval technology to access sources. Focuses on developing media center retrieval systems.

EDU 681 Seminar in Teaching Reading (3.0); 3 cr. Recent trends and research in teaching reading to L2 learners are treated. *Prerequisite:* ENL 623.

EDU 682 Seminar in Teaching Writing and Composition (3.0); 3 cr. Recent trends and research in teaching writing to L2 learners will be covered. *Prerequisite:* ENL 623.

EDU 683 Seminar in Teaching Literature (3.0); 3 cr. Recent trends and research in teaching literature to L2 learners will be covered in this course. *Prerequisite:* ENL 623.

EDU 684 Seminar in Teaching ESP Courses (3.0); 3 cr. Seminar in Teaching ESP Courses (3.0); 3 cr. Recent trends and research in teaching English for professional learning purposes to L2 learners will be studied. *Prerequisite:* ENL 623.

EDU 699 Thesis (6.0); 6 cr. This course researches an issue directly related to the field of concentration with a fieldwork study.

DEPARTMENT OF MEDIA STUDIES

ADVERTISING AND MARKETING

BA DEGREE

COMMUNICATION ARTS - JOURNALISM AND ELECTRONIC MEDIA EMPHASIS

COMMUNICATION ARTS - RADIO AND TELEVISION EMPHASIS

MEDIA STUDIES

MA DEGREE

BACHELOR DEGREE

DEPARTMENT OF MEDIA STUDIES

Associate Professors:	Bou Zeid, Maria; Chidiac, May; El Khoury, Jessica; Khabbaz, Nicolas; Mady, Christy.
Assistant Professors:	Houssni, Joseph; Sayyah, Rita.
Senior Lecturers:	Abi Adam, Naoum; Donerian, Vatche; Lahoud, Sam.
Lecturers:	Haddad, Pierrot; Rechdan, Melhem.
Lab Instructor:	Al-Achy, Samer

THE DEGREE OF BACHELOR OF ARTS IN ADVERTISING AND MARKETING

Mission

The mission of the advertising sequence is to prepare students for careers in account handling, media planning and management, creative roles in advertising agencies, and in-house advertising. The program also incorporates principles of marketing, consumer behavior, promotional strategy, and other pertinent courses.

Program Educational Objectives

The program will prepare students to:

- Lead a productive career in various areas of the advertising and marketing industry;
- Apply their linguistic, analytical, communication, and creative skills to further the development of the advertising industry in Lebanon and the region;
- Become lifelong learners and find success in their chosen field;
- Act ethically as advertising and marketing professionals; and
- Pursue graduate studies in advertising and marketing research.

Learning Outcomes

Upon graduation, students should be able to:

- Understand the main principles and concepts of the advertising and marketing field;
- Develop full advertising and marketing plans and campaigns that meet client needs and market requirements;
- Prepare and deliver oral presentations and written reports (including the advertising brief and pitch) pertinent to the advertising and marketing field;
- Practice advertising and marketing in accordance within the ethical, moral, and industry codes within the local, international, and global markets;
- Design a professional portfolio including work with a number of local advertising firms; and
- Evaluate the power and effectiveness of communication technologies and its ability to function as agents of social change.

Graduation Requirements
Students pursuing this major must complete a total of 102 credit hours with a minimum cumulative GPA of 2.0/4.0 in their core and major courses. These 102 credits are divided as follows:

Degree Requirements (102 credits)

Liberal Arts Curriculum **30 cr.**
- Media Studies students may satisfy 3 credits of their Ethics requirement by taking COA 360 Media Ethics.
- Media Studies students may satisfy 3 credits of their Cultural Studies and Social Science requirements by taking COA 350 Current Issues.

Core Requirements **19 cr.**
ADM 466, COA 201, COA 230, COA 252, COA 359, COA 362, PDP 201.

Major Requirements **43 cr.**
ADM 216, ADM 341, ADM 352, ADM 450, ADM 455, ADM 457, ADM 481, ADM 490, COA 270, COA 275, COA 316, FDP 201, FDP 214, MRK 201, MRK 311, MRK 321.

Students must choose 6 credits from the following pool major electives: **6 cr.**
ADM 468, MGT 201, COA 223, COA 311, AVF 315, COA 350, COA 352, COA 360, COA 365, COA 368, COA 475, COA 499, JOU 210, JOU 310, JOU 323, JOU 340, JOU 341, JOU 450, JOU 460, JOU 461, JOU 465, MRK 313, MRK 433, STA 206.

Free Electives **4 cr.**

Minor in Advertising and Marketing (18 credits)

The NDU minor in Advertising and Marketing is comprises of 18 credits. Any student may elect to do a minor in this area provided that he or she is in good academic standing, (i.e. if he or she has a GPA of 2.0/4 and above.) Students can only count up to 6 credits, which may have taken from the list of the required courses for this minor prior to electing a minor in Advertising and Marketing. Minors must be declared at least one year before expected graduation date.

Total Requirements **18 cr.**

Required Courses			**12 cr.**
ADM	216	Principles of Advertising	3 cr.
ADM	341	Media Planning and Analysis	3 cr.
ADM	352	Creativity and Copywriting	3 cr.
ADM	455	Digital Advertising	3 cr.
Select 6 credits from the following pool			**6 cr.**
FDP	214	Design for Advertising	3cr.
MRK	311	Consumer Behavior	3cr.
ADM	457	Digital Media Planning	3cr.
COA	316	Production Techniques: Advertising	3cr.

Undergraduate Courses: Advertising

ADM 216 Principles of Advertising (3.0); 3 cr. This course introduces first year advertising students to the field of advertising and its relationship to and role in the field of marketing. Students discover basic advertising principles and the characteristics of mass and interactive media, including television, newspapers, magazines, outdoor, radio, and social media as advertising vehicles. The course also examines advertising agency structures and teaches students in-depth ad analysis. *Corequisite:* ENL 105.

ADM 341 Media Planning and Analysis (3.0); 3 cr. This course provides an introduction to strategic media planning in line with the latest trends and practices in the industry. Students assess the strengths and limitations of different communication channels to devise a comprehensive media plan in accordance with budget, personnel, and strategic goal requirements. Students use software related to media planning and conduct industry-related research on agencies involved in planning, buying, and selling media. *Prerequisite:* ADM 216.

ADM 352 Creativity and Copywriting (3.0); 3 cr. This course introduces the concepts and approaches related to creativity and copywriting in the field of advertising. Students practice the basic techniques of advertising headline and body copy through integrating their input in the design and execution of print, electronic, and outdoor advertising. Regular peer evaluations and in-class ad analyses help boost creativity and perspective. *Prerequisite:* ADM 216. *Corequisite:* FDP 214.

ADM 450 Consumer Activation Programs (3.0); 3 cr. This course describes new and innovative ways of advertising to the consumer. Terms like shopper marketing, brand activation, advergaming, and branded content are becoming an essential part of the programs advertisers are creating for consumers to activate marketing communication in alternative media forms different from regular TV, radio, or press. *Prerequisite:* ADM 352.

ADM 453 Global Advertising (3.0); 3 cr. This course analyzes the history, development, and current status of international advertising based on the cultural, economic, political, and linguistic characteristics of the countries studied. Students are required to develop an innovative project with an international dimension. Importance of diversity to global advertising is stressed. *Prerequisite:* ADM 341. *Corequisites:* ADM 352, COA 362.

ADM 455 Digital Advertising (3.0); 3 cr. This course explores Internet advertising and digital marketing issues, concerns and ideas. It will cover marketing and statistical concepts, digital platforms (i.e. mobile, social media), and provides an understanding to different online marketing tools and vehicles (i.e. email marketing, social media analytics, SMS text, apps, etc.). Students will learn to evaluate, design, and execute Internet-based advertising and promotional campaigns in order to meet specific business objectives like customer acquisition and increased brand awareness.

ADM 457 Digital Media Planning (3.0); 3 cr. This course allows students to understand the digital marketing scheduling tools, structures of digital media agencies, and apply and create digital media planning templates, plans, budgets, strategies, and set KPIs to achieve the demands/objectives of clients on digital platforms. *Prerequisite:* ADM 455.

ADM 466 Seminar Series in Advertising (1.0); 1 cr. This course is comprises of a series of lectures, seminars, and workshops on topics related to the field of advertising and marketing. The lectures are organized by the Department and may be given by academics or experts in the field. Pass or Fail grade only. *Prerequisite:* Junior Standing.

ADM 468 Selected Topics in Advertising 1 (3.0); 3 cr. This course introduces senior students to pertinent topics not addressed in the Advertising and Marketing curriculum. It gives the students the chance to delve deeper into relevant advertising trends and happenings. *Prerequisites:* COA 201, ADM 216, MRK 201.

ADM 481 Internship in Advertising (1.0); 1 cr. This course offers students the opportunity to apply what they have learned in their academic program to the real world industry of advertising and/or marketing. The experience helps students develop professional confidence and understand workplace requirements in a supervised work setting.

ADM 490 Senior Study in Advertising (3.0); 3 cr. This course involves the conceptualization of a successful advertising campaign for an actual client. Students are expected to integrate their understanding of theory and practice to research, plan, and create the campaign that includes selecting media, maintaining cost efficiencies, and setting a media schedule. Students are required to present their campaign and pass a mandatory exit exam. *Prerequisite:* COA 362. Senior Standing and a grade of "C" or above are required.

COMMUNICATION ARTS
- JOURNALISM AND ELECTRONIC MEDIA EMPHASIS
- RADIO/TV AND FILM EMPHASIS

THE DEGREE OF BACHELOR OF ARTS IN COMMUNICATION ARTS - JOURNALISM AND ELECTRONIC MEDIA EMPHASIS

Mission

The mission of the Journalism program is to prepare students to become reporters in various print and media outlets. Students will also augment their journalistic skills with a variety of public relation courses that will broaden their communication skills and improve their career opportunities in different organizational and professional settings. Students will practice and refine their writing, reporting, and other journalistic skills.

Program Educational Objectives

The program will prepare students to:

- Lead a productive career in journalism, public relations, and electronic media;
- Employ the journalistic and communication skills acquired in the form of print, broadcast, and digital media in both English and Arabic;
- Apply strong professional competence to serve in journalistic tasks, in the press, radio, television and net media;
- Act ethically as media professionals; and
- Pursue graduate studies in journalism, public relations, and electronic media research.

Learning Outcomes

Upon graduation, students should be able to:

- Identify the theoretical and conceptual foundations of the field of journalism and the manner through which such foundations are applied to practice in the field;
- Illustrate ideas, thoughts, news, reports, and other journalistic works in clear, correct, vivid, accurate, and meaningful language;
- Categorize information and gathered material by providing meaning to them and explaining their relevance and consequences to the recipients;
- Become lifelong learners in the field;
- Demonstrate genuine creativity in writing and reporting styles;
- Acquire and practice written and oral communication skills for print, broadcast and online media; and
- Critically analyze and interpret journalistic situations encountered during their daily work.

Graduation Requirements

Once admitted to the program, students are required to develop competence in both English and Arabic. They must also complete an internship at one of the media outlets in the Lebanese market. Students pursuing this major must complete a total of 102 credit hours with a minimum cumulative GPA of 2.0 / 4.0 in their major requirements.
These 102 credits are divided as follows:

Degree Requirements (102 credits)

Liberal Arts Curriculum **30 cr.**

- Media Studies students may satisfy 3 credits of their Ethics requirement by taking COA 360 Media Ethics;
- Media Studies students may satisfy 3 credits of their Cultural Studies and Social Science requirements by taking COA 350 Current Issues;

Core Requirements: **19 cr.**
COA 201, COA 230, COA 252, COA 359, COA 362, JOU 466, PDP 201.

Major Requirements: **41 cr.**
ARB 302, COA 270, COA 275, COA 352, COA 366, COA 415, COA 425, JOU 210, JOU 310, JOU 323, JOU 350, JOU 370, JOU 371, JOU 450, JOU 480, JOU 490.

Students must select 6 credits from the following major electives: **6 cr.**
ADM 216, ADM 341, AVF 315, COA 223, COA 311, COA 350, COA 360, COA 365, COA 368, IAF 322, IAF 331, JOU 340, JOU 341, JOU 369, JOU 451, JOU 461, JOU 465, PDP 321, POS 320.

Free Electives: **6 cr.**

Minor in Journalism (18 cr.)

The NDU minor in Journalism is comprised of 18 credits. Any student may elect to take a minor in this area provided that he or she is in good academic standing (i.e. if he or she has a GPA of 2.0/4 and above.) Students can only count up to 6 credits which he or she may have taken from the list of the required courses for this minor prior to electing a minor in Journalism. Minors must be declared at least one year before expected graduation date.

Total Requirements			**18 cr.**
Courses Required			**12 cr.**
JOU	210	Mass Media Language	3 cr.
JOU	310	News Writing and Reporting	3 cr.
JOU	323	Web journalism	3 cr.
JOU	371	The Newsroom	3 cr.
Select 6 credits from the following pool			**6 cr.**
COA	360	Media Ethics	3 cr.
COA	365	Talk Shows	3 cr.
COA	366	Diction and Presentation	3 cr.
JOU	350	Investigative Journalism	3 cr.
JOU	450	Specialized Journalism	3 cr.
JOU	451	Fashion and Life-style Journalism	3 cr.
COA	350	Current Issues	3 cr.

Minor in Public Relations (18 cr.)

The NDU minor in Public Relations is comprises of 18 credits. Any student may elect to do a minor in this area provided that he or she is in good academic standing (i.e. if he or she has a GPA of 2.0/4 and above.) Students can only count up to 6 credits which he or she may have taken from the list of the required courses for this minor prior to electing a minor in Public Relations. Minors must be declared at least one year before expected graduation date.

Total Requirements			**18 cr.**
Major Requirements			**12 cr.**
COA	252	Principles of Public Relations	3 cr.
JOU	340	Public Relations Techniques	3 cr.
JOU	210	Mass media Language	3cr.
JOU	323	Web Journalism	3 cr.
Select 6 credits from the following pool			**6 cr.**
COA	350	Current Issues	3 cr.
COA	360	Media Ethics	3 cr.
COA	365	Talk Shows	3 cr.
COA	366	Diction and Presentation	3 cr.
JOU	450	Specialized Journalism	3 cr.
JOU	451	Fashion and Lifestyle Journalism	3 cr.

Undergraduate Courses: Communication Arts Journalism Emphasis

JOU 210 Mass Media Language (3.0); 3 cr. This course focuses on journalistic writing in Arabic and introduces students to various basic writing forms for the mass media. The course area of emphasis is on writing basic news stories and press releases while focusing on accurate grammatical structure, spelling, and sentence style. *Corequisite:* ARB 212 or ARB 231.

JOU 310 News Writing and Reporting (3.0); 3 cr. This course builds on principles practiced in JOU 210. Emphasis is laid on the process of information gathering, reporting, and writing for the mass media. The course stresses the elements of news, leads, and styles of advanced news stories. Students practice interviewing techniques. *Prerequisite:* JOU 210.

JOU 323 Web Journalism (3.0); 3 cr. This multimedia course examines the emerging forms of information delivered by computer and related convergence of print and broadcast media. Students will practice the latest digital revolution, how to use the technology, and how the interactive engagement between journalists and citizens has transformed the business. Blogging, podcasting, video, audio slideshow, social media, web writing, and citizen journalism will be examined and practiced. *Prerequisite:* JOU 210.

JOU 340 Public Relations Techniques (3.0); 3 cr. This course is designed to introduce students to different public relations techniques, tactics, applications, and tools to identify and reach specific audiences through various media. Students will focus on analyzing and producing print, including news releases, pitch letters, biographies, proposals, crisis communications, oral messages, in addition to other tools to create a public relations kit. Students will also be requested to carry out public relations events following the professional principles in the field. *Prerequisite:* COA 252.

JOU 341 Public Relations Planning and Event Management (3.0); 3 cr. This course acquaints students with key public relations skills and event management techniques while providing them with proper exposure to all facets of planning, executing, and analyzing corporate events in-line with corporate goals and objectives. Students are supposed to examine each phase of a successful event and to focus on project management skills needed to research, design, plan, market, co-ordinate, and evaluate events. Special emphasis is placed on the critical role that public relations plays throughout the management process. Students are expected to learn the tactics, tools, and insights required to create winning events that are successfully publicized. *Prerequisite:* COA 252.

JOU 350 Investigative Journalism (3.0); 3 cr. This course focuses on the different investigative reporting techniques in addition to the use of the scientific methods to connect events with accurate fact-checking, detection of secrets, and the use of public records. Students will examine various traditions of investigative reporting. They will be exposed to advanced course tools and hands-on experiences. They will also practice working as individuals or teams on writing their investigative projects. *Prerequisite:* JOU 210.

JOU 369 Special Topics in Journalism. (3.0); 3 cr. This course is a seminar that covers the latest topics affecting mass media, emerging technologies, the changing face of communications, in addition to the ethical practices in the field. It also focuses on variable content issues in order to understand the diverse perception of media. Topics may include, sports reporting, foreign correspondence, the impact of social media, environmental issues; etc.

JOU 370 Newspaper Production (1.0); 1 cr. Students shall produce a campus publication in which they incorporate their acquired journalistic skills. They will get hands-on experience in writing, editing, and laying out features and photos. *Corequisite:* JOU 310.

JOU 371 The Newsroom (3.0); 3 cr. This course introduces students to the different newsroom responsibilities including preparing newscasts and expanding their skills in newsroom management. *Prerequisite:* COA 275.

JOU 450 Specialized Journalism (3.0); 3 cr. This course covers different areas of journalism, such as foreign affairs, sports, arts, lifestyle, environment, business, human rights, and others. *Prerequisite:* JOU 310.

JOU 451 Fashion and Lifestyle Journalism (3.0); 3 cr. This course covers journalism skills in writing for fashion and lifestyle. It involves covering related events and understanding the craft of fashion design, design schools, and a brief idea about history of fashion. *Prerequisite:* JOU 450.

JOU 461 Public Relations and Protocol (3.0); 3 cr. This course introduces advanced public relations students to the array of rules, conventions, and expectations that professional practitioners should master to interact in high-level business settings. It acquaints students with the key aspects of protocol that include the written and unwritten rules of etiquette and cultural norms. This course also provides an overview of how to support business objectives of an organization in both public and private sectors. Moreover, it emphasizes protocol in diplomatic affairs and how public relations tie in with political figures to deliver messages in the world of diplomacy. *Prerequisite:* COA 252.

JOU 465 Public Relations and Image Consultancy (3.0); 3 cr. This course acquaints students with the concept of image consultancy and its tools, while emphasizing the use of these tools in influencing the public perception of corporations, individuals and organizations. It also provides students with the opportunity to review, discuss, and examine the professional environment and Public Relations' role in achieving business objectives of organizations. It finally introduces students to the techniques and mechanics that are used to master the delivery of winning campaigns to influence public opinion. *Prerequisite:* COA 252.

JOU 466 Seminar Series in Journalism (1.0); 1 cr. This course is composed of a series of lectures, seminars, and workshops modules related to journalism and electronic media organized by the Department. The course is taught in English and in Arabic. Pass/Fail grade only. *Prerequisite:* Junior Standing.

JOU 480 Journalism Internship (1.0); 1 cr. This course provides an essential professional training in a reputable media outlet under the supervision of a faculty advisor or an instructor. Weekly diaries, papers, and a written portfolio are required. *Prerequisite:* Senior Standing.

JOU 490 Senior Study (3.0); 3 cr. This course is designed to support students during the planning and execution of the final senior project presentation and the written thesis that examines in depth an area in print journalism. Students will show their work progress during the semester. Oral presentation of the project is required and graded. *Prerequisite:* COA 362, Senior Standing. In order to complete this class for graduation, a grade of "C" and above is required.

THE DEGREE OF BACHELOR OF ARTS IN COMMUNICATION ARTS - RADIO/TV AND FILM EMPHASIS

Mission

The mission of the Radio and Television program is to prepare students for opportunities in electronic media production, programming and on-air broadcasting, scriptwriting, directing, and film techniques. In addition to a variety of courses in social sciences, English, and other LAC courses, the program stresses the skills that will help prepare Radio and Television students in their careers. Introductory and advanced instruction in audio and video techniques are supported by hands-on experience in our well-equipped Antoine Choueiri Radio and TV studios.

Program Educational Objectives

The program will prepare students to:

- Lead a productive career in the various areas of the field;
- Apply the theoretical, practical, and technical skills in radio, television and film in the industries;
- Employ creative talents and innovative skills in their chosen field;
- Act ethically as media professionals; and
- Pursue graduate studies in radio, television, and film research.

Learning Outcomes

Upon graduation, students should be able to:

- Demonstrate knowledge of television and film creation and production as a craft and a collaborative process;
- Analyze and interpret audio-visual content through the perspectives of various theoretical frameworks;
- Use written, oral, and visual communication skills to communicate information and ideas;
- Acquire in-depth knowledge of the world film industry;
- Recognize how media can be used as a tool to promote public engagement in current issues;
- Produce media productions including directing, cinematography, editing, lighting, and sound; and
- Evaluate the power and effectiveness of communication technologies and their ability to function as agents of social change.

Graduation Requirements

Students pursuing this major must complete a total of 103 credit hours with a minimum cumulative GPA of 2.0/4.0 in their major requirements.
The program culminates in a senior project that incorporates the skills acquired during the years spent at NDU. A "C" grade and above on this project is required for graduation. The 103 credits are divided as follows:

Degree Requirements (103 credits)

Liberal Arts Curriculum **30 cr.**

- Media Studies students may satisfy 3 credits of their Ethics requirement by taking COA 360 Media Ethics.
- Media Studies students may satisfy 3 credits of their Cultural Studies and Social Science requirements by taking COA 350 Current Issues

Core Requirements **9 cr.**

COA 201, COA 359, COA 362.

Major Requirements **43 cr.**

AVF 210, AVF 213, AVF 221, AVF 225, AVF 226, AVF 271, AVF 273, AVF 275, AVF 310, AVF 311, AVF 312, AVF 320, AVF 325, AVF 330, AVF 430 or AVF 431, AVF 480, AVF 490.

Students must choose one group of the following concentration areas: **12 cr.**
Directing and Scriptwriting: AVF 435, AVF 445, AVF 455, AVF 457.
Sound: AVF 436, AVF 446, AVF 374, AVF 453.
Cinematography: AVF 437, AVF 447, AVF 455, AVF 457.
Television and Film Production: AVF 433, AVF 443, AVF 453, and AVF 374.

Students must choose 6 credits from the following pool: **6 cr.**
AVF 215, AVF 216, AVF 313, AVF 315, AVF 316, AVF 335, AVF 350, AVF 374, AVF 465, AVF 466, AVF 495, AVF 496, COA 475, CSC 202, CSC 277, MUS 211, MUS 221, MUS 331.

Free Electives **3 cr.**

Minor in Radio and Television (18 cr.)

The NDU minor in Radio and Television is comprises of 18 credits. Any student with a good academic standing, (i.e. if he or she has a G.P.A of 2.0/4 and above) may enroll in this minor. He or she may only count 6 credits, which he or she may have taken from the list of the R/TV Minor requirements while pursuing another major. Minors must be declared at least one year before expected graduation date.

Total Requirements			**18 cr.**
Required Courses			**12 cr.**
AVF	225	Lighting Fundamentals	2 cr.
AVF	273	Sound for Film	2 cr.
AVF	275	Editing Fundamentals	2 cr.
AVF	310	Scriptwriting	3 cr.
AVF	320	Directing Fundamentals	3 cr.
Select 6 credits from the following pool			**6 cr.**
AVF	311	The Art of Documentary	3 cr.
AVF	325	Directing and Acting Skills	3 cr.
AVF	330	Television Production	3 cr.
AVF	453	Dramatic Productions	3 cr.
AVF	457	Cinematography	3 cr.
CSC	202	Computer for Visual Arts	3 cr.

Undergraduate Courses: Communication Arts Radio/TV and Film Emphasis

AVF 210 Acting Workshop (2.0); 2 cr. This course exposes students to the basics in acting techniques including voice, movement, and transitions through exercises that develop concentration, imagination, and listening. Students participate in theater games and diverse performance pieces to implement the skills learned.

AVF 213 Art of the Film (3.0); 3 cr. This course provides an overview of the history of motion pictures through looking at their artistic, technological, and industrial development. It introduces students to the formation and development of influential film movements emphasizing the aesthetic and thematic qualities that emerged from these movements.

AVF 215 Dramatic Art (3.0); 3 cr. This course traces the history of the western theater from its origins till the 20th century. It discusses the formation, development, aesthetic, and thematic qualities of major theater movements, schools, and genres. The course also introduces students to leading theater artists and provides a brief overview of Asian and oriental theater.

AVF 216 Mythology and Storytelling (3.0); 3 cr. This course closely examines the role, if not the duty, of the storyteller with particular attention paid to the notion of the muse or supernatural visitor that aids in the artistic adventure. The course will provide examples from poetry, theater, film, dance, and art, with a study of the influence of mythology on the performing arts and the arts in general.

AVF 221 The Art of Images (3.0); 3 cr. In this course, students will learn to view images critically (i.e. still and moving), seeing them as works of art that both reflect and influence society. Additionally, students will gain insight into the technical, historical, and aesthetic aspects of the image.

AVF 225 Lighting Fundamentals (2.0); 2 cr. This course introduces students to the theoretical and practical use of lighting in television studio productions including drama, talk shows, and news. Students learn how to analyze and enhance dramatic nuances through the creation of appropriate lighting setups. *Corequisite:* AVF 271.

AVF 226 Advanced Lighting (1.2); 2 cr. This course builds upon the skills acquired in Lighting Fundamentals to use lighting in a number of media. It emphasizes cool lighting and outdoor lighting for video and film cameras. Students are encouraged to explore concepts, such as character movement lighting, dramatic lighting, and scene interpretation through lighting. *Prerequisite:* AVF 225.

AVF 271 Introduction to Sound (2.0); 2 cr. This course provides the basics of sound and the essential rules of sound recording for film and video. It also provides a comprehensive introduction to the fundamentals of audio post-production. This elaborate process will be taught both in theory and in practice.

AVF 273 Sound for Film (2.0); 2 cr. The course builds upon the material and skills acquired in AVF 271. It trains students in advanced skills in audio post-production for film and multimedia using industry-standard software. The students will learn the basic functions for editing, designing, and mixing sound, and then apply them through in-class supervised exercises. *Prerequisite:* AVF 271.

AVF 275 Editing Fundamentals (2.0); 2 cr. Students will acquire the basic skills needed for editing video footage using non-linear editing softwares. They will gain practical experience putting short film, commercials and several other concepts together and making them flow. The course

will also introduce the way visual effects are incorporated in the editing process.

AVF 310 Scriptwriting (3.0); 3 cr. Students will study film terms and formats, work with treatments, scenarios, and shooting scripts, analyze film and television clips, shorts, tapes, and full-length films with an emphasis on understanding the writer's perspective. Numerous writing assignments and exercises will be assigned with the intent of developing student's ability to write for a visual medium. Students must write a script of a short film or video. *Prerequisite:* Junior Standing.

AVF 311 The Art of Documentary (3.0); 3 cr. This course centers on the study of the history, theory, craft, and current practices within the genre of documentary filmmaking. Topics include, investigating current theoretical debates surrounding documentary filmmaking by exploring a variety of styles, forms, and conventions through both a film studies and production component. *Prerequisite:* AVF 275.

AVF 312 Film Theory and Aesthetics (3.0); 3 cr. This course is an introduction to film theory and the branch of aesthetics. Film theory describes how cinema functions as a medium and how cinema signifies. Film aesthetics concentrates on film as an art form (i.e. film style and form as it is articulated via narrative structure, use of camera, color, performance, sound, music, editing, and composition.) *Prerequisite:* AVF 213.

AVF 313 Film Analysis (3.0); 3 cr. This course introduces methods of film analysis and criticism. It focuses on structure, composition, mise-en-scène, cinematography, sound, and editing through frame-by-frame examination of motion pictures. This course stresses a particular director (i.e. Godard, Hitchcock, Altman, Bergman, etc.), period, or style (i.e. film noir, western, etc.), and studies how meaning is structured and perceived in the screen image. It includes close examination of the ways scholars, critics, and filmmakers have explained and discussed the materials used to make movies and how these materials may be used to construct films and produce meaning. The experiences of the viewer, critic, and community are discussed in this course. *Prerequisite:* AVF 213.

AVF 315 World Cinema Survey (3.0); 3 cr. This course will explore the world of cinema including American (North and Latin), European, Asian, African, Middle Eastern, and Lebanese cinema. Focus will be on the construction of a variety of film forms and styles, including the classic Hollywood style, experimental films, new wave, and global cinemas.

AVF 316 Lebanese & Arab Cinema (3.0); 3 cr. This course examines Lebanese and Arab Cinema through the notion of cultural and national identity in both its personal and collective representation. It focuses on a body of films made in countries such as Lebanon, Egypt, Palestine, Morocco, Algeria, Syria, and others.

AVF 320 Directing Fundamentals (3.0); 3 cr. This course introduces the work of the director from the scriptwriting to the staging process, including pre-production, production, and post-production. It also covers work with actors, and managerial responsibilities. *Prerequisite:* AVF 275.

AVF 325 Directing and Acting Skills (3.0); 3 cr. This course focuses on acting and directing actors in addition to the director-actor interaction, with a focus on different methods and styles of acting, in relationship to the script and the characters. It includes building of a character, creating a role, and performing for live audiences and in front of a camera. *Corequisite:* AVF 310.

AVF 330 Television Production (3.0); 3 cr. This course introduces students to multi-camera studio production and location video recording. They will explore directing techniques, operation of studios and control rooms, conceptualization, basic scriptwriting, audio board operations, and lighting in a studio setting. *Prerequisite:* AVF 275.

AVF 335 Production Design (3.0); 3 cr. This course examines the role of the production designer and art director in film. It will investigate the contribution that production design brings to the narrative and the story and how to identify such an input while viewing a film. Students will learn the basic principles of how to develop a visual concept, design the set, create the budget, and work together in a team to build the finished set.

AVF 350 Conceptual Thinking (3.0); 3 cr. This course introduces students to the methods and processes of conceptual and critical thinking from coming up with an idea to researching to creating creative strategies to executing a project. It focuses on verbal as well as audio-visual conceptualization that are related to media in general and more specifically to film and television.

AVF 374 Post-Production Processes (3.0); 3 cr. This course covers the overall post-production process. Students learn the incredible creative power that post-production provides the filmmaker in the following areas: picture editing, sound editing, sound mixing, music, and color correction. *Prerequisite:* AVF 275.

AVF 430 Documentary Production (3.0); 3 cr. This course introduces the work of the documentary filmmaker from choosing a topic to research to shooting, including pre-production, production, and post-production. It also covers work with real stories, and managerial responsibilities. Students will produce a short documentary by the end of the semester. *Prerequisites:* AVF 311, AVF 330.

AVF 431 Independent Filmmaking (3.0); 3 cr. This course synthesizes the work of a filmmaker in producing his or her own short film. It combines both the art of filmmaking (i.e. creative process and vision) with the production aspect as the filmmaker here is an integral part of the manufacturing of the film project. Students will produce a low-budget short fiction film by the end of the semester. *Prerequisites:* AVF 310, AVF 320.

AVF 433 Television Formats (3.0); 3 cr. This course provides extensive background on the development of TV formats and their structure. Based on the analysis of international programs, students will learn how to adopt and create a TV SHOW that will correspond to local needs and cultural demands. They will also acquire scientific and operational methods that are useful to create new and successful TV formats.

AVF 435 Writing for TV and Film (3.0); 3 cr. This course provides students with an advanced study into the art of investigating, structuring, and writing original screenplays. Students will research and develop authentic characters, as well as how to generate solid story plot devices using professional screenplay styles. Different film genres and story techniques will also be explored, in addition to the process of literary adaptation of plays, novels, or short stories and transforming them into a feature-length film. *Prerequisite:* AVF 310.

AVF 436 Music for Film (3.0); 3 cr. This course provides all the necessary information, tools, and tricks for the student to be prepared for a more creative approach to sound work in a film/video production, notably music. *Prerequisite:* AVF 273.

AVF 437 Lighting for Film (3.0); 3 cr. This course focuses on operations with camera, lighting, and grip equipment as they apply to different film forms (i.e. narrative, documentary, experimental, etc.), genres, and styles. In-class and outside class group assigned filming exercises. Film screenings and field trips to complement class lectures, demonstrations, and discussions. *Prerequisite:* AVF 226.

AVF 443 Film Production and Distribution Strategies (3.0); 3 cr. This course provides students with the knowledge and skills related to the business side of film production in all its aspects and phases, from networking to negotiating with locations and vendors, to managing relationships with the director and the crew, to budgeting and scheduling concerns, and to developing the marketing strategy for the film.

AVF 445 Directing Actors for Camera (3.0); 3 cr.
AVF 445 Directing Actors for Camera (3.0); 3 cr. This course prepares students to become directing actors through the exploration of equipment used in media performance (i.e. blue screen acting, ear prompting, teleprompting, and microphone applications in voice performance and voice over, etc.) It is based on the exploration and skill building of techniques used in performance before the camera, including but not limited to advanced character, development, make-up techniques, and special problems in character preparation for feature films. *Prerequisite:* AVF 325.

AVF 446 Sound Design and Post-Production (3.0); 3 cr. This course provides the necessary information, tools and steps for the students to craft an attractive, inspired, and inventive audio track to a moving picture. *Prerequisite:* AVF 273.

AVF 447 Lighting Design and Techniques (3.0); 3 cr. This course covers lighting design for stage and video design, organization, graphic representation of lighting for stage, video and film production. It is based on laboratory work on actual stage presentations, video productions, and film shoots. Venues include performing arts stages, video studios, and sound stages along with shooting on location. *Prerequisite:* AVF 226.

AVF 453 Dramatic Productions (3.0); 3 cr. This course involves both the theoretical and the practical elements needed to shoot, direct, and edit a TV dramatic production. Students shoot before a live audience. Final project requires a complete TV drama beginning with the original script to the final tape. *Prerequisites:* AVF 310, AVF 330.

AVF 455 Directing Techniques and Aesthetics (3.0); 3 cr. This course trains the students to deal with the techniques and aesthetics of the screen craft in order to create an artistic identity and understand the job of the director throughout the production process. *Prerequisites:* AVF 310, AVF 330.

AVF 457 Cinematography (3.0); 3 cr. The main focus in this course is on cinematographic techniques for film and video. Students will analyze cinematographic styles, including qualities of camera movement and composition, lenses, and lighting as expressive tools. They will equally explore aesthetics, techniques, and responsibilities of the cinematographer. Students will get hands-on experience shooting scenes with film and video cameras, lighting, and grip equipment. *Prerequisite:* AVF 226.

AVF 465 Selected Topics I (3.0); 3 cr. This course explores rotating themes in audio, video, and film production. Topics include music for film and television, digital audio effects, documentary production, lighting for cinematography, and directing for film. Other topics may be recommended by the Department.

AVF 466 Selected Topics II (3.0); 3 cr. This course studies topics on audio, video, film production to be proposed by students or instructors, and approved by the department prior to commencing work. Other non-technical topics may be offered.

AVF 480 Internship for Audio-Visual Arts and Film (1.0); 1 cr. This course is a practical supervised off-campus work experience that relates to the student's career objectives. *Prerequisite:* Senior Standing.

AVF 490 Senior Study (3.0); 3 cr. This course provides a comprehensive overview of the phases and procedures that go into film production. Students are required to produce and present a short film, which may vary depending on their area of concentration. *Prerequisite:* COA 362, senior standing. The passing grade is "C" grade or above.

AVF 495 Independent Study I (3.0); 3 cr. This course offers advanced topics in communication chosen to meet individual student needs and interests, supervised by assigned instructors. Prerequisite: senior standing or permission by the head of the Department.

AVF 496 Independent Study II (3.0); 3 cr. This course offers advanced topics in communication chosen to meet individual student needs and interests, supervised by assigned instructors. *Prerequisite:* senior Standing or permission by the head of the Department.

COA 201 Mass Media Essentials (3.0); 3 cr. This course focuses on the study of various types of mass and interactive media and how they function in modern society. It surveys the historical, economic, and regulatory bases of the media along with their social implications. *Corequisite:* ENL 105.

COA 203 Make up and Color (0.2); 1 cr. This course introduces students to the basic principles of makeup for stage and film. The topics explored include the basics of color theory, use of makeup products, and effects of camera on makeup. It offers students the opportunity to apply makeup principles to multiple character profiles and situations.

COA 205 Archive Organization (1.0); 1 cr. This course acquaints students with the principles, history, and research around the representation of archival materials. They learn how to effectively make use of archived traditional and digital resources in a library setting.

COA 223 Speech Communication (3.0); 3 cr. This course explores the basic principles and concepts of oral communication in a variety of speaking formats. It develops student competence in speech content formation and delivery by focusing on language, style, voice, audience analysis, reasoning, and communication strategy. The course also explores the effective use of visual aids in complementing speech communication. *Prerequisite:* COA 201.

COA 230 Information Gathering and Analysis (3.0); 3 cr. This course helps students to improve their information literacy, and their basic information gathering and analysis skills using various navigation techniques and tools (i.e. search engines, databases, etc.) *Prerequisite:* COA 201.

COA 252 Principles of Public Relations (3.0); 3 cr. This course covers the history, principles and practices of public relations with emphasis on publicity, public opinion and program planning. *Corequisite:* COA 201.

COA 270 Studio Workshop (1.0); 1 cr. This course introduces students to the functions and operations of radio and television equipment. Students will get hands-on experience through operating the equipment and developing enhanced familiarity with cameras and digital technology. Essential for subsequent R/TV courses.

COA 275 Editing I (2.0); 2 cr. Students acquire the basic skills needed for working on a variety of editing systems, linear and non-linear. Topics covered in the course include basic setup, adjusting and customizing preferences and various editing and trimming techniques.

COA 311 Radio Programming (3.0); 3 cr. This course focuses on radio as a medium and industry. It introduces students to radio programming concepts and audio production techniques using studio equipment. Students will practice by producing and executing different radio shows.

COA 316 TV Production Techniques for Advertising (3.0); 3 cr. This course introduces advertising and marketing students to the tools, techniques, and production skills essential to conceive, design, edit, and produce real life television commercials and radio spots in a studio setting. Students will be involved in hands-on practice executing original storyboards. Oral presentations are required. *Corequisite:* COA 270.

COA 350 Current Issues (3.0); 3 cr. In this course, students will be introduced to local, regional, and international events and issues that are affecting the world today. The role and responsibility of the global citizen will be emphasized as the class conducts research on, develops understanding of, and examines the coverage given by the media to various issues. Class discussions and presentations of various political, economic, and social issues constitute a sizable bulk of the course's material. Topics may include globalization, Environmental concerns, Terrorism, Nuclear Proliferation, World hunger, drugs, and the relationship between developing countries and developed countries.

COA 352 Media Law and Responsibility (3.0); 3 cr. This course offers a study of different types of censorship and their relationship to moral codes, religions, politics, laws, and society. It also gives an overview of media law in Lebanon.

COA 359 Media and Society (3.0); 3 cr. This course explores the interactive relationship between media and society. It enhances students' media literacy to help them decode messages critically. Issues discussed include the impact of media Messages, stereotyping, media and religion, rock music, and the impact of advertising, among others. *Prerequisite:* COA 201.

COA 360 Media Ethics (3.0); 3 cr. This course provides students with a theoretical foundation to deal with ethical issues pertaining to the media such as dubious methods in newsgathering, conflict of interests, invasion of privacy, shocking pictures, and intellectual dishonesty, among others.

COA 362 Mass Communication Research (3.0); 3 cr. Students will become familiar with research design, data collection, and analysis as applied in the various quantitative and qualitative research methods including some means of measurement. Students will also practice conducting a focus group session and interpreting the results. They will write and conduct a questionnaire. A well-documented research paper incorporating the principles of the course is required. It may not be taken concurrently with ADM 490, COA 490 and JOU 490. *Corequisite:* STA 202.

COA 365 Talk Shows (3.0); 3 cr. This course trains students for hosting and executing a TV program that deals with various issues in front of a live audience.

COA 366 Diction and Presentation (3.0); 3 cr. English and Arabic. In this course, students will learn how to speak for different types of programs. They will do exercises on pronunciation in Arabic and English, and they will learn the phonetics of both languages.

COA 368 International Communication (3.0); 3 cr. This course provides an overview of the mass media systems of the world with a concentration on the flow of information and the role of media in the development of the Third World. *Prerequisite:* COA 201.

COA 369 Selected Topics I (3.0); 3 cr. This course explores rotating themes in audio, video, and film production. Topics include music for film and television, digital audio effects, documentary production, lighting for cinematography, and directing for film. Other topics may be recommended by the Department.

COA 370 Selected Topics II (3.0); 3 cr. This course studies topics on audio, video, and film production to be proposed by students or instructors, and approved by the Department prior to commencing work. Other non-technical topics may be offered.

COA 415 Broadcast News Operations (3.0); 3 cr. This course covers the gathering, preparation, and presentation of a generic broadcast news product. It trains students in the process of directing news in all its phases such as equipment operation and crew management (i.e. camera operators, anchors, VTR operator, prompter, character generator, etc.) *Prerequisites:* COA 270, COA 275.

COA 425 Writing and Reporting for the Electronic Media (3.0); 3 cr. This course examines the principles and practices of news writing and reporting for electronic media. It covers the major forms of writing, news styles, newsgathering, and news evaluation. *Prerequisite:* COA 275.

COA 426 Electronic News Gathering (3.0); 3 cr. This course aims to familiarize students with shooting, editing, and producing techniques for the electronic news media. A lecture and lab course, it provides students with experience as producers and directors for news programs. It also includes an overview of ENG equipment as well as EFP (Electronic Field Production) techniques and equipment and digital video production on location. *Prerequisite:* COA 312.

COA 475 Computer Graphics and Video Animation (3.0); 3 cr. This course is designed to further the students' skills in applying computer graphics in developing video animation projects. It also includes the use of computer animation as applied to a variety of art media. The course incorporates principles of movement and timing, as well as basic compositing.

COA 499 Independent Study (3.0); 3 cr. This course offers advanced topics in communication chosen to meet individual student needs and interests, supervised by assigned instructors. *Prerequisite:* Senior Standing or permission by the head of the Department.

MEDIA STUDIES

THE DEGREE OF MASTER OF ARTS IN MEDIA STUDIES

Mission

The mission of the MA program in Media Studies is to prepare its graduates to become lifelong commentators, media text makers, and media interpreters in a globalized world. It provides students with conceptual and analytical tools and practical experience to pursue careers in communication, to further academic enhancement at the doctoral level, and to help those already working in those fields upgrade their knowledge in their chosen area of study.

Program Educational Objectives

The program will prepare students to:

- Pursue higher studies towards a doctoral degree;
- Acquire in-depth knowledge and research skills in the workplace; and
- Contribute to the growth and ethical development of the field in Lebanon and the region.

Program Learning Outcomes

Upon graduation, students should be able to:

- Communicate ideas for effective media production;
- Synthesize diverse perspectives in order to contribute to an ethical media environment;
- Apply appropriate research methodologies to produce scholarly work; and
- Employ effective communication strategies in the production and consumption of traditional and digital media.

Admission Requirements

The program admits students holding bachelor degrees in any of the areas listed above as well as those holding degrees in other majors.
Students from non-related majors must take and pass a number of preparatory courses that the Department deems necessary to pursue a Master of Arts in Media Studies.
Students must obtain at least a "B" grade in any remedial course.
Candidates should have a GPA of 3.0. Applicants with a GPA between 2.8 and 3.0 may be admitted on a probationary basis. They must achieve a GPA of 3.0 in their first semester in order to continue in the program.
Candidates must also submit three letters of recommendation, an updated C.V., and a personal statement explaining their educational goals and reasons for selecting this area of study. Other university graduate admission requirements may apply as specified in the Catalog.

Graduation Requirements

All students must take a total of 12 credits in the general field of Communication in addition to 18 credit hours in the concentration area. The remaining six credits will be selected from a pool of courses offered by the program. Students must write a 6 credit thesis to bring the total to 36 hours required for graduation.

Students must maintain an overall GPA of 3.0/4.0 for the 36 credits required to graduate. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 "Cs" per program.

Degree Requirements (36 credits)

Core Courses **12 cr.**
COA 610, COA 613, COA 652, COA 680.

Major Requirements - Advertising **18 cr.**
ADM 620, ADM 621, ADM 650, ADM 651.
Thesis Requirements
COA 690, COA 691.

Major Requirements - Television Production and Management **18 cr.**
COA 630, COA 635, COA 650, COA 655.
Thesis Requirements
COA 690, COA 691.

Major Requirements - Electronic Journalism **18 cr.**
JOU 610, JOU 630, JOU 635, JOU 640.
Thesis Requirements
COA 690, COA 691.

Major Requirements - Media Data Analytics **18 cr.**
CSC 608, CSC 609, CSC 648, CSC 602.
Thesis Requirements
COA 690, COA 691.

Major Pool Electives **6 cr.**
Student must choose 6 credits from the following courses:
ADM 651, ADM 681, COA 685, JOU 631, JOU 680, ADM 620,
COA 655, COA 681, COA 692, COA 693.

Television Management and Production students may choose to replace COA 690 and COA 691 with:
COA 692 Film **6 cr.**

Media Data Analytics students may choose to replace COA 690 and COA 691 with:
COA 693 Data Project **6 cr.**

Graduate Courses: Media Studies

ADM 620 Advertising and Marketing Management (3.0); 3 cr. This course examines the general array of agency personnel and studies the functions of each department including the duties and responsibilities of key decision-makers in the agency.

ADM 621 Seminar in Integrated Marketing Communication (3.0); 3 cr. This course applies the theories of integrated communication tools such as marketing, advertising, public relations, e-commerce, and others. It also looks at IMC's usage, management, and limitations.

ADM 635 Advanced Advertising Campaigns (3.0); 3 cr. This course provides students with an in-depth understanding of the principles and practices that businesses use for their marketing communication strategies including advertising using traditional and new media. It introduces students to advanced research, strategy formation, client presentation, and execution of an advertising campaign for a national client. The purpose is to come up with breakthrough advertising strategies that provide companies with a competitive advantage in the marketplace.

ADM 650 Advanced Media Planning (3.0); 3 cr. This course provides students with advanced studies in media planning concepts and strategies. It trains students how to use media as a competitive business tool through the integration of related theories from marketing and communication in media planning. Students become acquainted with multiple up-to-date media buying strategies, horizontal and vertical media planning, and media buying software.

ADM 651 Advanced Creative Strategy in Advertising (3.0); 3 cr. This course familiarizes students with the theoretical foundations and conceptual techniques of creative strategies in advertising and marketing communications. Students practice the research processes required to formulate idea-based solutions to advertising and marketing problems. Students explore, formulate, and evaluate creative strategies for various print and digital media used by advertisers.

ADM 681 Seminar in Advertising and Society (3.0); 3 cr. This course critically examines the role of advertising and its effects on the individual and society within the larger social, cultural, political, economic, and global contexts. Advertising is investigated as a central component in the capitalist economy and a cultural driving force that affects and is affected by norms and attitudes. Advertising campaigns and their implications in the modern world are explored as sites for the negotiation and construction of identity, nationality, faith, belongingness, gender, and ethnicity.

COA 510 Communication Concepts and Practices (3.0); 3 cr. This course provides prospective master's students from other disciplines with an overview of the basic communication concepts in the fields of journalism, public relations and advertising. Students get acquainted with key communication terms and practices involved in the fields of study such as campaigning, reporting, and copywriting and branding, as well as research methods.

COA 512 Topics in Broadcasting and Digital Media (3.0); 3 cr. This course provides prospective master's students coming from other disciplines with an overview of concepts in the fields of broadcasting and digital media. Students will become acquainted with key production techniques, aesthetics, theories and practices.

COA 610 Theories of Mass Communication (3.0); 3 cr. This course stresses theory in relation to the form, effects, production, and content of mass media. The theories covered in the course help guide students' comprehension and inquiry into the role that mass media play in society. Each theory covered offers a number of assumptions about the media, society, and the individual, while describing how these elements interact and shape each other. The course provides students with theoretical foundations that would guide research and comprehension of new theoretical contributions and future developments in theory.

COA 613 Semiotics of Images (3.0); 3 cr. This course introduces students to semiotic tools that would enable them to analyze and understand visual culture texts, pictures, and multimodal texts. It will draw on historical and contemporary examples from new media, television, film, and other forms of visual communication. The objective is to critically analyze and interpret visual phenomena with an understanding of the underlying cultural and political power structures.

COA 620 Comparative Broadcasting (3.0); 3 cr. This course focuses on the study of global electronic media systems. The objective of this course is to analyze the rules governing the regulations and the flow of programming between nations. The course also examines the construction of new satellites and transmission systems.

COA 630 Broadcast Station Management (3.0); 3 cr. This course explores and analyzes the problems of management, programming, sales, promotion, and marketing. Emphasis is on the study of management issues such as decision-making, news evaluation, and budgeting in both commercial and non-commercial broadcast media.

COA 631 Media and Politics: (3.0); 3 cr. This course examines the power of mass media on the political sphere, especially in democratic societies, and the interplay of influence between the two. The role of media consultants in such processes is examined. *Prerequisite/Corequisite:* none.

COA 635 Television and Promotional Strategies (3.0); 3 cr. This course focuses on the design and development of promotional strategies for television. It covers areas in television promotion including program format, genres, production processes, scheduling, rating systems, and program development processes. It also covers the historical and conceptual development of broadcast advertising while dealing with the implications of new media.

COA 650 Advanced Television Production (3.0); 3 cr. This course fosters the skills needed to plan and produce television programs. It focuses on the initial research writing process, aesthetic decisions, and final production. Throughout this process students are expected to develop and produce several programs for television.

COA 652 Advanced Research Methods in Mass Communication (3.0); 3 cr. This course focuses on the study of communication content and messages forms in addition to their impact on the audience. It emphasizes research methods, data gathering, sampling, and the application of those methods in mass communication and advertising. *Corequisite:* COA 610.

COA 655 Documentary Films (3.0); 3 cr. This course presents an advanced exploration of documentary cinema, its structure, forms, cinematographic language, aesthetics, and schools. It involves the analysis of documentary productions and their impact.

COA 660 Independent Study (3.0); 3 cr. This course takes into consideration the instructor's specialization and the student's interest and requires the completion of a research paper. *Prerequisite/Corequisite:* none.

COA 680 Seminar in Mass Communication Law and Ethics (3.0); 3 cr. This course studies the legal and ethical controls of media such as government regulations and industry laws. Codes of ethics and traditional societal or self-imposed guidelines that govern the performance of the media are discussed. This course incorporates the implications of religious

morals, specifically those of the Catholic Church, on the legal and ethical functions of the mass media.

COA 681 Seminar in Cross-Cultural Communication (3.0); 3 cr. This course focuses on the study of how culture, identity, values, and beliefs shape the creation and perception of communication messages at the local, national, and international level. Topics include identity, perceptions of masculinity and femininity, ethnocentrism and the Other, colonialism and cross-cultural encounters, language, power, and globalization.

COA 682 Seminar on the Lebanese Media (3.0); 3 cr. This course explores the Lebanese media and includes topics such as history, economics, and current practices and trends. The seminar also examines how the Lebanese culture is shaping and is being reshaped by the Lebanese media. *Prerequisite/Corequisite*: none.

COA 685 Entrepreneurship in Media (3.0); 3 cr. This course familiarizes students with the fundamentals of entrepreneurship and the evolving business models for media. It also emphasizes the transformations in the new media landscape. Students are expected to create a business plan for a media startup.

COA 690 Thesis I (3.0); 3 cr. Students must present a written thesis proposal that includes a statement of the topic, a review of the literature, a presentation of the theoretical foundations, and a statement of the nature of the data collection, procedures, and analysis. Students must complete 21 major credit hours prior to registering for this course. To pass this course, students must defend their thesis proposal. *Prerequisites:* COA 610, COA 652.

COA 691 Thesis II (3.0); 3 cr. This course is the logical extension of Thesis I. At this stage, students work on their data gathering and analysis, and finalize the writing, and formatting of the study. *Prerequisite:* COA 690.

COA 692 Film (6.0); 6 cr. Students must produce and direct a thesis film on a significant topic upon consultation with the advisor. The film must be accompanied by written requirements defending all the film elements use. Students must complete 21 major credit hours prior to registering for this course. *Prerequisites:* COA 601, COA 652 and COA 655.

COA 693 Data Project (6.0); 6 cr. students must produce a data project on a significant topic upon consultation with the advisor. The project must be accompanied by written requirements explaining the process, the elements and the outcomes of the project. *Prerequisites:* COA 610, CSC 648.

JOU 610 Newsroom Management (3.0); 3 cr. This course covers the internal management of media outlets operations, practice, status of personnel, budgeting, and effects of technological developments on organization and strategies.

JOU 621 Editorial Operation (3.0); 3 cr. This course focuses on the discussion of the decision-making process in the newsroom. Various elements influencing the day-to-day operation of the print media are covered. Students also examine the role of owners and gatekeepers.

JOU 630 PR Programs and Campaigns (3.0); 3 cr. This course focuses on planning operations of PR programs prepared for various organizations. It also includes the analysis and discussion of real life situations and real life problems in addition to a construction of events that might take place.

JOU 631 International Public Relations (3.0); 3 cr. The course highlights the role of public relations in the new age of global marketing and communication. The topics include global campaigns, international corporate PR, and cyberspace PR, while examining social media tactics and strategies.

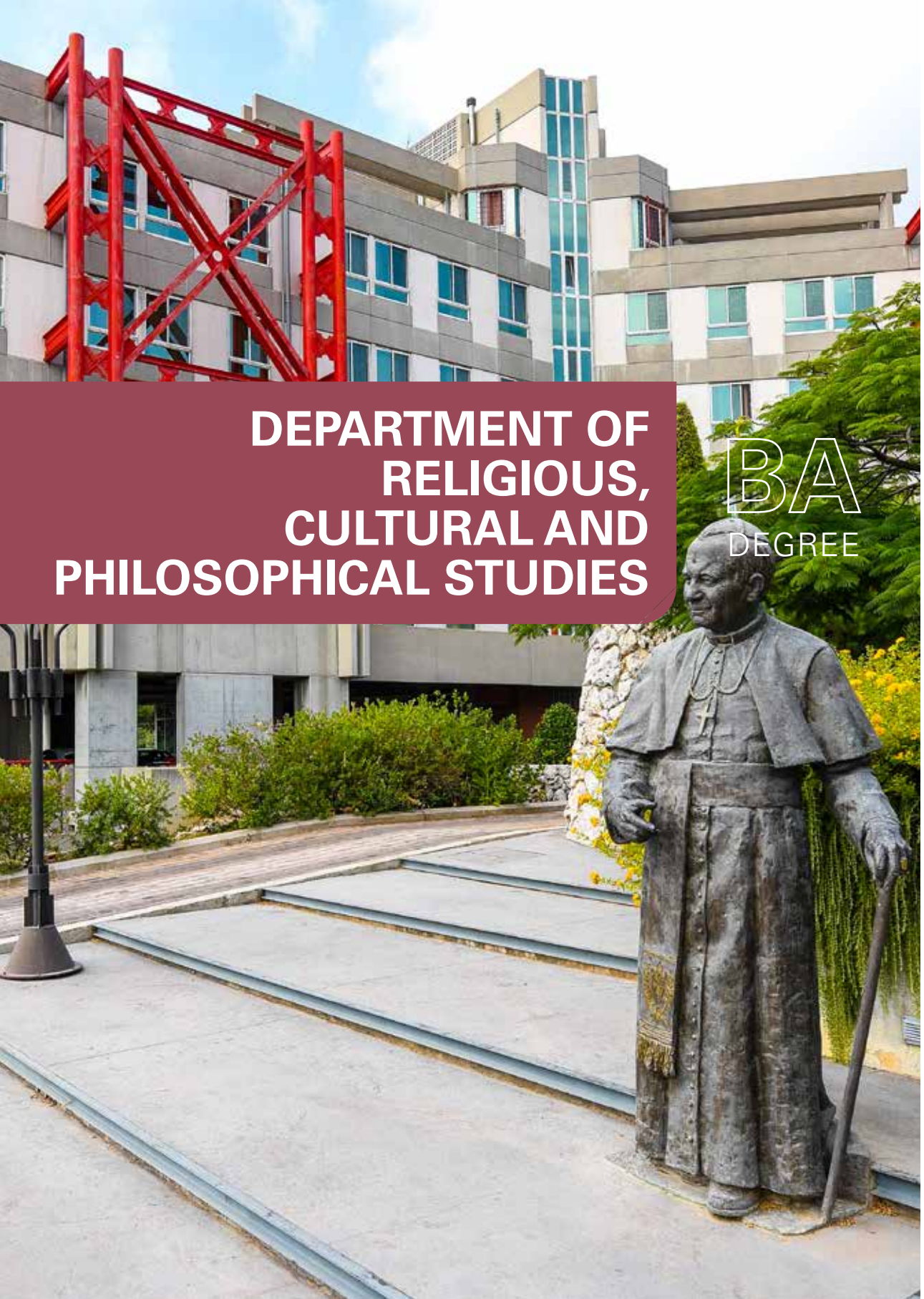
JOU 635 Issue Anticipation and Crisis Management (3.0); 3 cr. This course will provide students with the skills to foresee potential problems, locate solutions, and react adequately. It also prepares them to apply highly sophisticated communication strategies to crisis management.

JOU 640 Online Journalism (3.0); 3 cr. This course focuses on promoting the best practices in online journalism covering both multimedia and online storytelling. Journalism students will acquire hands-on experience in the production of many content types of digital media.

JOU 680 Seminar in Selected Topics (3.0); 3 cr. This course is a research seminar that focuses on various topics such as freedom of the press, media and gender roles, media and religion, and other topics.

COA

JOU



DEPARTMENT OF RELIGIOUS, CULTURAL AND PHILOSOPHICAL STUDIES

BA
DEGREE

DEPARTMENT OF RELIGIOUS, CULTURAL AND PHILOSOPHICAL STUDIES

Professors: Alam, Edward; Fahed, Ziad.

Associate Professors: Antaby, Georges (Fr.); El Khoury, Akram (Fr.); Rahme, Chady.

Senior Lecturer: Azouri, Pamela

Minor in Philosophy

The NDU minor in Philosophy comprises 18 credits. Any student may elect to get a minor in this area provided that he or she is in good academic standing (i.e. securing a minimum GPA of 2.0/4.0.) With the approval of the RCPS Department Chair, students selecting this minor may only count up to 6 credits which he or she may have taken from the list of required courses for this Minor in Philosophy. Minors must be declared at least one year before expected graduation date.

Program Educational Objectives

The program will prepare students to:

- Understand the human quest for truth, and the different ways humans have engaged in this quest;
- Show how philosophy is the foundation of human quest for knowledge and truth, whether theoretical or practical;
- Gain familiarity with the world's major philosophical traditions;
- Develop the ability to assess arguments using logic, critical thinking, and argumentative methods;
- Gain knowledge of various philosophical and cultural traditions;
- Enable students to express philosophical ideas through both written and oral forms;
- Encourage students to respect -and interact with diversity for it is the only proper attitude leading to a genuine dialogue; and
- Guide students toward developing an autonomous mind, independent thinking, and genuine sense of leadership.

Courses required:

- Students enrolled in the Philosophy minor must complete 18 credits:

PHL	232	Ancient World Philosophy	3 cr.
PHL	211[1]	Logic and the Scientific Method	3 cr.
PHL	311	Ethics and the Modern World	3 cr.
PHL	333	Medieval World Philosophy	3 cr.
PHL	334	Modern & contemporary World Philosophy	3 cr.
PHL	411	Philosophical Themes	3 cr.

[1] LAC course

Minor in Sociology

The Minor in Sociology is composed of 15 credits. A 2.0/4.0 minimum GPA is required of any student who elects to get a minor in this area. With the approval of the RCPS Department Chair, a concerned student may apply to this minor's requirements up to 6 credits from already taken LAC courses. Minors must be declared at least one year before expected graduation date.

Program Educational Objectives

The program will prepare students to:

- Understand and appreciate the kinds of questions sociologists ask and the kinds of explanations they offer;
- Become familiar with some of the major issues, problems, and findings in sociology;
- Apply interpretative and critical skills needed for the sound study of sociological phenomena;
- Improve their cognitive and communication skills, exercises, and regular assignments intended to enhance students' abilities to read, analyze, discuss, and write skillfully;
- Approach challenges faced by groups with a sociological perspective, through research, need assessment, and design and application of training programs, such as team building, group dynamics, conflict resolution, etc.; and
- Develop inter-personal relational skills.

Course Required

- Students enrolled in the Sociology minor must complete 15 credits:

SOL	201	Introduction to Sociology	3 cr.
SOL	313	Family Violence	3 cr.
SOL	316	Society and Women	3 cr.
SOL	322	Family: Sociological Perspectives	3 cr.
SOL	323	Society and Role of Intercultural Communications	3 cr.

Undergraduate Courses: Philosophy

PHL 101 Introduction to Philosophy (3.0); 3 cr. This course is meant to help freshman students develop a genuine thinking process, and highlight the exceptional and unmatched value philosophy reveals about the mere fact of being human. Accordingly, freshman students are shown the relevance of philosophy to every person in every field and are guided on how to develop critical thinking.

PHL 111 Introduction to Ethics (3.0); 3 cr. This is a philosophy course that introduces freshman students to ethical and moral thinking, and to what constitutes a moral agent. This course aims at analyzing the considerations that may count as reasons for and against the moral judgments students make. Selected texts on relevant topics treated by different scholars are addressed as illustrations.

PHL 211 Logic and the Scientific Method (3.0); 3 cr. This course introduces students to what may be called traditional logic. Emphasis is placed on the Greek philosophical tradition. Accordingly, there is a focus on Aristotle's "Organon" and its influence on the corresponding important medieval traditions in Europe. *Prerequisite:* ENL 213.

PHL 232 Ancient World Philosophy (3.0); 3 cr. This course introduces philosophy as the discipline that seeks to find answers to fundamental questions raised by every human, such as "What is reality?," "What is knowledge?," "How is it possible to know?," and "What is the best way to live?." While showing the distinctive yet relational nature of philosophy, with regard to science, art, and religion, this course offers basic previews of major landmarks, namely Far East traditions, such as Buddhism, Daoism, Confucianism, and Hinduism, pre-Socratic thinkers such as Thales, Pythagoras, Parmenides and Heraclitus, classical Greek philosophers (i.e. Socrates, Plato, Aristotle), and the Hellenistic schools of Stoicism, Skepticism, and Epicureanism. *Prerequisite:* ENL 213.

PHL 311 Ethics and the Modern World (3.0); 3 cr. This course offers a general analysis of early approaches to ethics and focuses on modern schools in the field. It is intended to familiarize students with different concepts of goodness, right and wrong, as well as rights and obligations. The course gives an overview of the ways these concepts operate in their respective ethical perspectives. *Prerequisite:* ENL 213.

PHL 333 Medieval World Philosophy (3.0); 3 cr. This course covers more than a millennium of philosophical thought, mostly marked by Christianity's encounter with, and integration of, classical Greek philosophy. Medieval World Philosophy includes African and Far East thinkers, offering different dimensions in their interpretations of the human's encounter with reality and dimensions such as metaphysics, ethics, logic, and philosophy of mind. The distinctive nature of each dimension opens before students new horizons in their quest for the truth. *Prerequisite:* ENL 213.

PHL 334 Modern & Contemporary World Philosophy (3.0); 3 cr. This course offers a study of the central philosophical themes addressed in the modern and contemporary period from different angles (i.e. epistemological, metaphysical, moral, and mystical) among others. The main themes of the course are related to the nature of mind and body, the way our consciousness apprehends the external world, the existence of God, rationality and non-rationality, and the quest for freedom and truth. Students are exposed to the ways these themes are addressed by thinkers such as Descartes, Kant, Hegel, Sartre, Gabriel Marcel, Mahatma Gandhi, Debendranath Tagore, and others. Inspired by all these thinkers, students are invited to find their own way of experiencing the world in their journey searching for meaning and truth. *Prerequisite:* ENL 213.

Undergraduate Courses: Religion

REG 101 Introduction to Religion (3.0); 3 cr. This course offers an elementary comprehensive approach to the characteristics of religions that have influenced history (i.e. the major concept(s) of what man is, the essential need man has for religion, the meaning, function, and objective(s) of religion, the different approaches to salvation, religion's basic constituents, the different concepts of God in relation to man and to the universe, the different forms of communication between man and God(s), and the ever-rising focal importance of religion, and therefore of God, in human life). For freshman students.

REG 212 Religion and Social Issues (3.0); 3 cr. While bringing students' attention to their common roots, this course introduces the basics of the three major monotheistic religions, seeking a mutual understanding of each other's cultures, and of the relationship human beings have with the universe and with God. The mainstream beliefs of the three religions are explained and examined through the discussions of major issues relevant to each of the religions in question. *Prerequisite:* ENL 213.

REG 213 Catholicism (3.0); 3 cr. This course presents the basic teachings of the Catholic Church and attempts to show how they can be understood and lived by today's youth (i.e. God through the Creeds, the Church in its historic developments, the Sacraments which help the faithful to practice their faith, prayers, saints, and the position of the Catholic Church on important controversial issues.) *Prerequisite:* ENL 213.

REG 215 World Religions (3.0); 3 cr. This course explores a variety of ways people have articulated their connections with the Sacred. Major religious traditions are addressed, namely, Christianity, Judaism, Islam, Hinduism, Buddhism, Confucianism, and Daoism. Frequent references are also made to ancient religious cultures such as the Mesopotamian, Persian, and Egyptian. *Prerequisite:* ENL 213.

REG 313 The Maronites: Faith and Cultural Heritage (3.0); 3 cr. This course explores the Maronite cultural heritage. It addresses Maronite theology and spirituality in the context of secular, social, and ecclesiastical history, from ancient through contemporary times. A particular emphasis is placed on the question of Maronite identity, while highlighting contributions of the Maronite faith and cultural heritage to the development of the region. *Prerequisite:* ENL 213.

REG 314 Marriage and Family in the Catholic Church (3.0); 3 cr. This course examines traditional and contemporary views of marriage and family in the light of the Catholic tradition. It also presents the Catholic teaching on marriage and the family. A particular emphasis is placed on the theological and ritual Syriac-Maronite contributions. *Prerequisite:* ENL 213.

Undergraduate Courses: Sociology

SOL 101 Essentials of Sociology (3.0); 3 cr. An introduction to different sociological perspectives will be covered through key sociological issues such as social class, race, gender, sexuality, religion, crime, and the media, with investigations into the causes and consequences of human behavior and insight into the interactions between society and the individual. For freshman students.

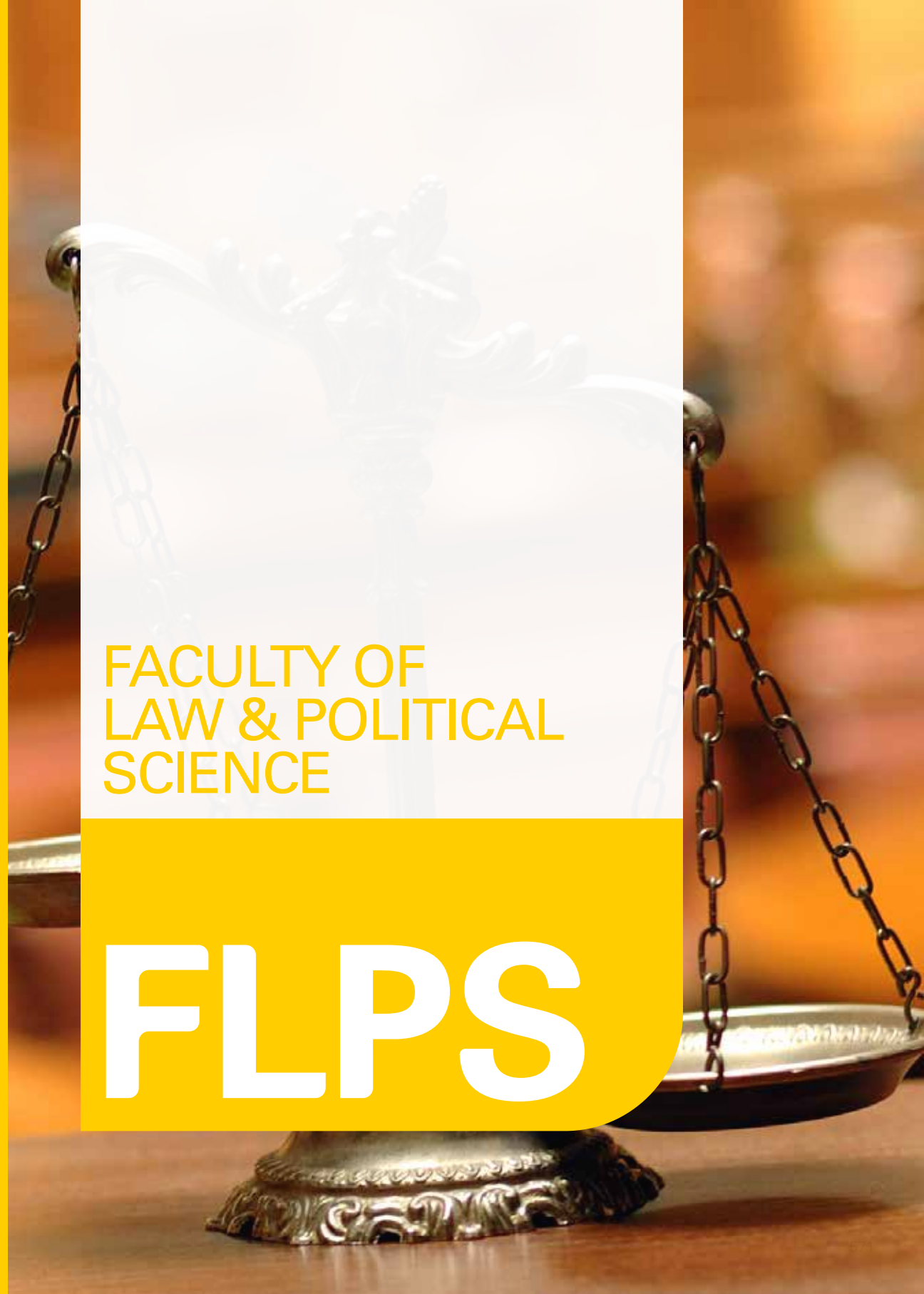
SOL 201 Introduction to Sociology (3.0); 3 cr. This course provides an overview on sociology as a secular discipline that explores social, religious, political, and economic issues in terms of social institutions, social forces, and group interactions. By doing so, this course explores different structures and combinations of social forces that influence the individual's social behavior and render him or her better qualified to become an active citizen of the world. *Prerequisite:* ENL 213.

SOL 313 Family Violence (3.0); 3 cr. This course develops a broad overview of the social problem of family violence. Topics include physical, psychological, and sexual abuse of children, neglect, sibling abuse, dating violence, marital violence, elder abuse, sexual violence and human trafficking. Students will understand the biological, psychological, religious, and sociological theories that attempt to explain violence among intimate people, the consequences of violence, and the preventive measures and strategies for dealing with violence in the family. *Prerequisite:* ENL 213.

SOL 316 Society and Women (3.0); 3 cr. This course explores significant contributions achieved by women in the family, education, politics, the workplace, and others fields. The course also focuses on the negative effects on women that may be caused by popular cultures, religion, sexuality, the economy, the family, health care, government policies, among others. Special focus is placed on race and ethnicity, religion, social class, and on different forms of gender inequality. *Prerequisite:* ENL 213.

SOL 322 Family: Sociological Perspectives (3.0); 3 cr. This course is based on a sociological analysis of the family as a social institution, namely its origin, structure and variations, and patterns of intimate relationships. It examines, from a multicultural and multireligious perspective, family organization and disorganization through the analysis of mate selection, sexuality, gender and family roles, marriage and divorce, parenthood, and the diversity of family composition. It investigates key concerns for contemporary Lebanese families including communication and power, the balance of work and family obligations, the impact of social change, and current social policy issues. *Prerequisite:* ENL 213.

SOL 323 Society and Role of Global Intercultural Communication (3.0); 3 cr. This course is designed to give students an overview of various issues pertaining to communication across cultures, nationally and internationally. Global Intercultural Communication addresses diversity amongst different ethnicities and prepares students from different backgrounds to avoid miscommunication and to interact in a global community using effective communication skills. *Prerequisite:* ENL 213.



FACULTY OF
LAW & POLITICAL
SCIENCE

FLPS

FACULTY DIRECTORY

FACULTY DIRECTORY

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FACULTY PROFILE

FACULTY OF LAW AND POLITICAL SCIENCE

FACULTY PROFILE

The Faculty of Law and Political Science (FLPS) at Notre Dame University-Louaize (NDU) was founded and licensed in 2000 as a Faculty of Political Science, Public Administration and Diplomacy, which emerged from the Faculty of Humanities (FH) in order to provide greater focus on the core degree program of International Affairs and Diplomacy.

The rapid evolution of the new Faculty was the result of a dedicated, collaborative effort by the expert faculty members and administrators who launched a persistent campaign of course development and program designs. Guiding this process was the mission and values that the Faculty adopted for itself, based on the needs of society and the market as well as the pioneering, much-need role of NDU in the region, especially in the wake of extraordinary global upheavals. Those factors combined to give the Faculty a genuine advantage over competitors. The outcome of this effort presents itself in the 13 different programs and emphases that the Faculty currently offers.

A major achievement was accomplished in 2013 with the introduction of the first fully licensed Bachelor of Lebanese Law that is taught in English and Arabic. The license served to transform the Faculty into the FLPS. Other recent curricular developments included the introduction in 2011 of an MA in Human Rights (also the first of its kind in Lebanon) under the Political Science major, along with two new minors in Strategic Studies and Gender Studies. The Faculty implements continuous curricular review and innovations toward developing new courses and programs that serve the needs of prospective students and the Faculty mission.

The Faculty of Law and Political Science consists of two Departments:

- Department of Law
- Department of Government and International Relations

The Faculty of Law and Political Science offers programs leading to the degrees of:

- Bachelor of Law
- Bachelor of Arts in International Affairs and Diplomacy
- Master of Arts in International Affairs and Diplomacy
- Master of Arts in International Affairs and Diplomacy - International Law Emphasis;
- Bachelor of Arts in Political Science
- Bachelor of Arts in Public Administration*
- Bachelor of Arts in Political Science - NGOs Emphasis
- Master of Arts in Political Science
- Master of Arts in Political Science - NGOs Emphasis
- Master of Arts in Political Science - Human Rights Emphasis
- Master of Arts in Public Administration

Self-Designed Interdisciplinary Minor Program

NDU aims to provide students with the programs they need for their future and offers them the opportunity to design their own Self-Designed Interdisciplinary Minor program. Students who would like to explore this option have to fill in the minor proposal with the collaboration of the concerned Faculty and Office of the Registrar. For guidelines, rules and regulations of the Self-Designed Interdisciplinary Minor, kindly refer to the Office of the Registrar.

*Not offered at the present time

MISSION, VISION AND VALUES

Mission

The mission of the Faculty of Law and Political Science (FLPS) is to provide quality education that helps instill in our students the traits of refined intellect, moral integrity, enlightened citizenship, human solidarity, and responsible leadership in the public and private sectors. We serve our community by enhancing awareness about rule of law, human rights, the common good, sustainable development, peace education, and other basic precepts of democratic governance as well as by connecting it to the rest of the world through educational networks of cooperation and original applied research.

Vision

The FLPS envisions itself as a leading national and regional platform of intellectual and scholarly discourse on issues of government, politics, international relations, and human organizations. We consistently strive to provide our students and community with the most up-to-date education by introducing new courses and programs that cover new and expanding disciplines. The aim is to enrich the minds of our students with analytical and critical thinking approaches that transform them into leaders in the service of the community and essential interlocutors in the cultural/civilizational dialogue.

Values

True to the Maronite Catholic tradition of NDU, the FLPS is dedicated to serve as a beacon of enlightenment in the continuous search for truth and a better life. In this pursuit, we are guided by a value system founded on:

- Academic excellence;
- Integrity;
- Individual initiative;
- Intellectual freedom;
- Responsible citizenship and accountable leadership;
- Human solidarity;
- Conflict transformation and peace building;
- Diversity, dialogue, and cooperation;
- Subsidiarity; and
- Catholic Social Teaching.

The Lebanese Emigration Research Center (LERC)

The Lebanese Emigration Research Center (LERC) is an academic initiative of Notre Dame University-Louaize (NDU). Established in April 2003, it is the first center in Lebanon dedicated specifically to the study of migration.

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ACADEMIC DEPARTMENTS AND DEGREE PROGRAMS

Bachelor Degrees

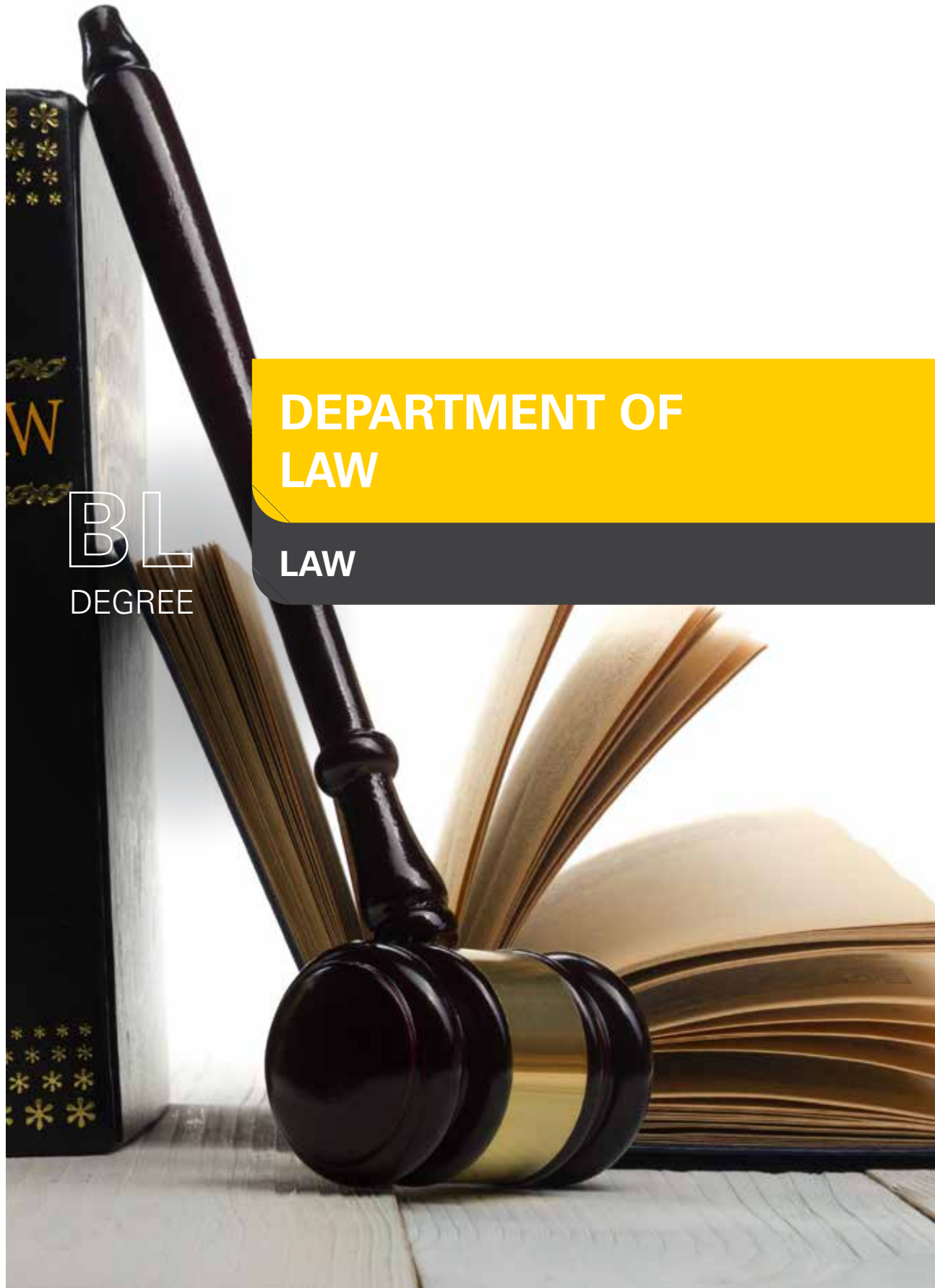
Admission Requirements:
Compliance with the University general rules and regulations, as appearing in this Catalog.

Graduation Requirements:
Students seeking a Bachelor of Law must complete a total of 140 credits, with an overall average of at least 2.0/4.0, and a minimum average of 2.0/4.0 in the major requirements. Students seeking all other Bachelor of Arts must complete a total of 105 credits with an overall average of at least 2.0/4.0 and a minimum average of 2.0/4.0 in the major requirements.

Residency Requirements:

1. **Residency Requirements for Bachelor of Law:**
   A minimum of 8 semesters (4 years) beginning with the Baccalaureate II or its equivalence, and a maximum of 16 semesters (8 years).

2. **Residency Requirements for all other Bachelor of Arts:**
   A minimum of 6 semesters (3 years) and a maximum of 12 semesters (6 years).



DEPARTMENT OF LAW

LAW

DEPARTMENT OF LAW

Associate Professor: Fr. Akl, Francois; Samaha, Dany.

THE DEGREE OF BACHELOR OF LAW

In its endeavor to fulfil its part of the University mission, building "enlightened citizenship" for a civil society and a "world of truth, justice, love, and freedom" under the rule of law, the Faculty developed the Lebanese Bachelor of Law to answer the need for a better education in Law.

The new program accredited by the Lebanese Ministry of Education and Higher Education (MEHE) adds the English language component and the American educational approach to law studies. It maintains excellence in the coverage of state-required materials and augments them with a wealth of additional courses, dealing with contemporary and futuristic topics and using the most advanced teaching methodologies and techniques. Our graduating jurists will enrich the profession with advanced expertise and fresh perceptions acquired by adhering to the highest international standards of academic excellence while enhancing their service capabilities to the community and their employability with local, regional and international firms, and properly connecting Lebanon and its institutions to the globalized markets, laws, and systems.

This curriculum and this degree, however, do not allow the students to join any Bar Association in any foreign country unless they duly fulfil the requirements stipulated by each country.

Mission

Acknowledging the rule of law as the core premise for societal civility and development, the program aims at providing students with the most evolved education of all legal systems: Romano-Germanic, Civil Law, Common Law, Islamic Law, and all branches of Law (i.e. public, private, comparative, domestic, and international.) It also aims to graduate successful jurists who emerge as professional and societal leaders in pursuit of justice, committing themselves to ethical service of clients and the public, defending human rights, and standing out as the ultimate vanguards of proper citizenship and the rule of law.

Program Educational Objectives

The Bachelor of Law program aims to:

- Prepare students to pass the licensure exam;
- Equip students with adequate theatrical and research background to follow graduate studies in the fields of law;
- Provide students with skills to integrate technology and learned professional techniques into practice;
- Instill leadership and efficient management qualities in graduates;
- Integrate ethical principles and lifelong learning in future professional practice;
- Integrate ethical principles and lifelong learning in future professional practice; and
- Develop an understanding of law in both English and Arabic.

Program Learning Outcomes

Upon graduation from the Law program, students shall be able to:

- Demonstrate an understanding of all legal systems (Romano-Germanic, Common Law, and Islamic Law);
- Demonstrate an understanding of domestic and international Law;
- Demonstrate an understanding of comparative Law;
- Demonstrate an understanding of private and public Law;
- Develop an understanding of banking, commercial, financial, and investment Law;
- Develop the art of oral argument;
- Develop an understanding of different Lebanese Laws (i.e. civil law, commercial law, criminal law, procedure law, banking law, personal status law, intellectual property law, labor law, arbitration law, contract law, tort law, administrative law, real estate law, international criminal law, constitutional law, civil liberties and human rights, maritime and air law, obligations law, and public and private international law);
- Stipulate contracts, legal consultations, legal research, judgments, and arbitration awards; and
- Develop an understanding of Law in both English and Arabic.

Professional life

The study of the program, the resulting skills acquired, and the readiness of students prepare them for a professional life by enabling them to:

- Join the Beirut or Tripoli Bar Association in Lebanon;
- Join the Institute of Judicial Studies in Lebanon;
- Apply to become a public notary;
- Apply to any public or private job, whether administrative, advisory, or diplomatic;
- Work in the trade sector and the private investment sector in both Lebanon and abroad;
- Work as a legal advisor in both Lebanon and abroad;
- Work as a university professor in both Lebanon and abroad;
- Work in official national, international, or non-governmental organizations (NGOs); and
- Continue on to higher levels of Law studies both in Lebanon and abroad (L.L.M., J.D., Ph.D.).

Degree Requirements (140 credits)

Liberal Arts Curriculum **12 cr.**

Liberal Arts Curriculum for the Law degree are 12 credits divided, according to the below pools:

(3) Credits of the following pool

ARB 211 Appreciation for Arabic Literature
ARB 212 Advanced Arabic Grammar
ARB 224 Arabic Literature and Human Thought
ARB 231 Technical Arabic
ARB 306 The Modern Arabic Novel & Short Story
ARB 310 Arabic Theater

(6) Credits of the following pool
ENL 213 Sophomore Rhetoric

And
ENL 223 Communication Arts
Or
ENL 230 English in the Workplace
Or
ENL 231 Work Ready Now

(3) Credits of the following pool
REG 212 Religion and Social Issues
REG 213 Catholicism
REG 215 World Religions
REG 313 The Maronites: Faith and Cultural Heritage
REG 314 Marriage and Family in the Catholic Church

Core Requirements **41 cr.**
LAW 250, LAW 252, LAW 253, LAW 254, LAW 255, LAW 350, LAW 351, LAW 352, LAW 353, LAW 450, LAW 451, LAW 452, LAW 453, LAW 454.

Major Requirements **79 cr.**
LAW 201, LAW 202, LAW 203, LAW 204, LAW 205, LAW 206, LAW 207, LAW 208, LAW 301, LAW 302, LAW 303, LAW 304, LAW 305, LAW 306, LAW 307, LAW 308, LAW 309, LAW 310, LAW 311, LAW 401, LAW 402, LAW 403, LAW 404, LAW 405, LAW 406, LAW 495.

Major Elective Requirements **8 cr.**
LAW 260, LAW 261, LAW 262, LAW 263, LAW 264, LAW 265, LAW 360, LAW 361, LAW 362, LAW 363, LAW 364, LAW 365, LAW 366, LAW 367, LAW 368, LAW 369, LAW 370, LAW 371, LAW 460, LAW 461, LAW 462, LAW 463, LAW 464, LAW 465, LAW 466, LAW 467, LAW 468, LAW 469, LAW 470.

Undergraduate Courses: Law

LAW 201 Civil Law I: Introduction to Law I - Theory of Law (3.0); 3 cr. Civil Law is the basis of legal science. It is the only course taught for 8 semesters, which allows students to obtain a Bachelor of Law degree. The General Theory of Law is taught during the first semester. Course topics include the concept and characteristics of legal rules, division of legal rules (i.e. the branches of law), sources of legal rules, interpretation and construction of legal rules, application of legal rules (i.e. judicial authority, application in time and space), and legal systems (i.e. Romano-Germanic Law, Common Law, Islamic Law, Asiatic Law, etc.).

This lecture is supported by a workshop that helps students understand the course.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 202 Civil Law II: Introduction to Law II - Theory of Right (3.0); 3 cr. Civil Law is the basis of legal science. It is the only course taught for 8 semesters, which allows students to obtain a Bachelor of Law degree. The General Theory of Rights is taught during the second semester. The syllabus comprises the following topics:
- Definition of Rights;
- Types of Rights (political/civic rights - non-political rights: human rights; private rights: family rights, personal rights, chattels real, intellectual property);
- Elements of Rights (person - object - protection); and
- Sources of Rights (juristic fact - juristic act).

Prerequisite: LAW 201.

This lecture is supported by a workshop that helps the students to understand the course.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 203 Civil Law III: Obligations and Contracts - Sources (4.0); 4 cr. The Law of Obligations and Contracts is one branch of Private Law under the Civil Law legal system. It is the body of rules that organizes and regulates the rights and duties arising between persons within society.
This course aims to provide students with an understanding of the basic principles of Obligation and Contract Law in Civil Law. The course examines the concepts employed by the law for creating and enforcing obligations, including all sources of obligations (i.e. law, contracts, quasi-contracts, delicts, quasi-delicts) or contracts (i.e. law, contract, tort, unjust enrichment, obligation by unilateral will or unilateral promise).

By the end of this course, students should be able to:
- Differentiate between the different kinds of obligations and contracts in Private Law;
- Identify the essential principles of obligation and contract in each branch, as derived from leading cases;
- Explain the rules relating to the formation of contracts and certain further requirements, which must be satisfied to make contracts legally enforceable;
- Explain the contents of a contract and the rules governing the validity of terms, which exclude or restrict liability; and
- Explain how the principles of Obligations and Contracts reflect special and economic objectives.

Prerequisites: LAW 201, LAW 202.

This lecture is supported by a workshop that helps students understand the course.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 204 General Constitutional Law I (3.0); 3 cr. This course examines the general constitutional theories of the state and the political system, the different types

of state, the nature of constitutions, as well as the relationship between the legislature, executive, and judiciary, and the constitutional values, principles, rights, and civil liberties, in light of the long tradition of diverse philosophical and theoretical perspectives.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 205 Special Constitutional Law II (3.0); 3 cr. This course examines the formation, structure, and basic principles of Lebanese Constitutional Law, and will provide a comparative perspective on the Lebanese Constitution by looking at case law and institutions from other countries, including the USA, UK, France, Germany, the European Union, and United Arab Emirates (UAE).

Topics will include amendment mechanisms, Secession, judicial review, separation of powers, federalism, fundamental rights, equality, comparative procedure, property rights and economic liberties, entitlements to government aid, and guarantees of democracy.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 206 General and Lebanese Administrative Law I (4.0); 4 cr. This course is designed to introduce to students the major actions undertaken by legal administrative institutions. It aims to improve students' knowledge of administrative procedures and acts taken by the public administration. It will explain in depth the legal position of public administration with respect to an individual's legal position and improve the analytical skills of students in understanding the legal decisions/acts of the administration and their consequences on society, as well as on individual persons. The course will also shed light on the responsibility of public administration and its evolution through time in Lebanon and in France. Finally, the course aims to provide a basis upon which students will be able to work with the procedures needed for an administrative revision before the different administrative courts.

It explores the following topics: unilateral administrative acts, administrative contracts, administrative litigation, and administrative revisions.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 207 Civil Procedure Law I (3.0); 3 cr. This course surveys the principles, standards, and rules that govern how civil litigation proceeds, with a focus on Lebanese courts. It covers the fundamental and recurrent problems in civil actions, such as:

- General theory and conditions of admissibility of a law suit;
- Due process, including the notice and opportunity to be heard that must be given to litigants in the Lebanese legal system;
- Jurisdiction, including the scope of authority that Lebanese courts have over disputes and litigants; and
- The stages of litigation.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 208 General Criminal Law (4.0); 4 cr. This course considers the basic themes of Substantive Criminal Law, usually including the following topics: sources, scope and definitions of Criminal Law, principles of criminal responsibility. the significance of act (i.e. acts and omissions, the voluntary act requirement), intention, recklessness, and indifference, strict and absolute liability, objective and attribute liability, causation and result, justification and excuse with particular attention to the doctrines of necessity, intoxication, insanity, diminished capacity and automatism, aims and practice of punishment, and the relationship between doctrines and the various justifications for the imposition of punishment.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 250 Romano-Germanic Legal System (3.0); 3 cr. The Romano-Germanic Legal System (Civil Law or Civilian Law) is a legal system originating in Europe, intellectualized within the framework of late Roman law, and whose most prevalent feature is that its core principles are codified into a referable system, which serves as the primary source of law. This can be contrasted with Common Law Systems whose intellectual framework comes from judge-made decisional law, which gives precedential authority to prior court decisions on the principle that it is unfair to treat similar facts differently on different occasions (i.e. doctrine of judicial precedent). Historically, the Romano-Germanic legal system is the group of legal ideas and systems ultimately derived from the Code of Justinian, but heavily overlaid by Germanic, Canonical, Feudal, and Local Practices, as well as doctrinal strains such as natural laws, codification, and legislative positivism. Conceptually, the Romano-Germanic legal system proceeds from abstractions, formulates general principles, and distinguishes substantive rules from procedural rules. It holds case law to be secondary and subordinate to statutory law. The marked feature of the Romano-Germanic Systems is that they use Codes with brief text that tends to avoid factually specific scenarios. Code articles deal in generalities and thus stand at odds with statutory schemes which are often very long and very detailed. The Romano-Germanic Legal System is the most widespread system of law in the world, in force in various forms in about 150 countries.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 252 International Political Economy (3.0); 3 cr. The world economic system is now highly integrated, as reflected in the increased cross-border flows of capital and goods and in the activity of institutions like the World Trade Organization (WTO). In such a world, domestic political and economic dynamics have global implications, while international events also have far-reaching effects domestically. This course serves as a basic introduction to the scientific study of International Political Economy (IPE), an interdisciplinary field that focuses on the interplay between economics and politics. The underlying theme in the study of IPE is that economics and politics are intrinsically linked, with economic choices and preferences affecting political decisions and vice versa. With that fundamental understanding, the course begins by examining the various schools and theoretical approaches for analyzing the relationship between economics and politics. The rest of the course enlists these different approaches to address a variety of topics and issues related to the IPE, from the internationalization of production and the challenges of financial liberalization to international development and the effects of globalization and the transformation of the state.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 253 Introduction to Common Law (3.0); 3 cr. The course provides students with a historical, procedural, substantial, and practical understanding of the characteristics, functions, and principles of Common Law. It theoretically reviews Public and Private Common Law. A practical understanding of the laws is established through acquiring and applying the process of legal reasoning to Common Law case studies. The course also provides an overview of the economic analysis of Law and the ethical dimension of Law.

Language of Instruction: English.

LAW 254 European Union Law (3.0); 3 cr. The law of the European Union Law is largely based on the Treaty on European Union and the Treaty on the Functioning of the European Union, and legislation made under the Treaties by the Council, Parliament, and the Commission.

The course deals with the following:

- The institutions of the EU, including the jurisdiction of the Court of Justice and General Court;
- The essential features of the EU Law, and its incorporation into national law;

- The principles of free movement of persons and services within the EU;
- The rules governing the free movement of goods within the EU; and
- European Business Law.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 255 Estate Law (3.0); 3 cr. This course will endeavor to provide students with an understanding of the Estate/ property Law. The course examines the following topics:

- Tangible Estate;
- Intangible Estate;
- Real Estate;
- Chattels, Movables, Personal Estates;
- Landed Property;
- Yielding Right;
- Usufruct; and
- Easement Right.

This lecture is supported by a workshop that helps students understand the course.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 260 French Civil Code (2.0); 2 cr. Napoleon in his later life considered the Civil Code to be the most significant of his achievements. The Code represented a comprehensive reformation and codification of the French civil laws. Under the ancient regime, more than 400 codes of laws were in place in various parts of France, with Common Law predominating in the north and Roman Law in the south. The French Revolution overturned many of these laws. In addition, the revolutionary governments enacted more than 14,000 pieces of legislation. Five attempts were made to codify the new laws of France during the periods of the National Convention and the Directory. Through the efforts of Napoleon, the drafting of the new Civil Code in an expert commission, in which Jean-Etienne Marie Portalis took a leading role, took place in the second half of 1801. Napoleon attended in person 36 of the commission's 87 meetings. Although the draft was completed at the end of 1801, the Code was not published until March 21, 1804. The Civil Code represents a typically Napoleonic mix of liberalism and conservatism, although most of the basic revolutionary gains (i.e. equality before the law, freedom of religion, and the abolition of feudalism) were consolidated within its laws. Property rights, including the rights of the purchasers of the biens nationaux were made absolute.
The Napoleonic Code was to be promulgated, with modifications, throughout the Empire. The Civil Code has served as the model for the codes of law of more than twenty nations throughout the world.

This course will provide a systematic study of the French Civil Code. The course will start with a historical overview of the Code, and then focus on the legal concepts developed by the Code:

- **Preliminary Title:** The publication, effect, and application of the laws in general.
- **Book 1:** Persons.
- **Book 2:** Property and the different modifications of property.
- **Book 3:** Different modes of acquiring property.
- **Book 4:** Personal and Real Guarantees.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 261 Civil Liberties and Human Rights (2.0); 2 cr. This course provides a comprehensive grounding in all aspects of Human Rights and Civil Liberties: International humanitarian issues, refugee rights and laws, disaster and emergency relief, apartheid and racial discrimination, drug abuse, judicial activism, and global and regional perspectives of human rights.
The subjects include:

- Conceptual and theoretical understanding of Human Rights and Civil Liberties;
- Systems, organizations, and instruments of Human Rights and Civil Liberties;
- Contemporary Human Rights situations and issues;
- Specialization course, such as:
  - *Activism and roles of NGOs, Amnesty International, and the Red Cross, as well as Rights of the Child and Human Rights;*
  - *Women and Human Rights, Religion and Human Rights, Population and Human Rights;*
  - *Legislation-specific themes in Human Rights: International, Regional and National Human Rights Provisions;*
  - *Violation-specific themes in Human Rights: Custodial Violence and Disappearances; Pretrial Detention, Undertrials and Prisoners; Human Rights and Police; Human Rights during emergency;*
  - *Refugee-specific themes in Human Rights: Refugee Laws; Refugee Protections; Refugee Status and Humanitarian Assistance; Refugee Problems in Lebanon; and*
  - *Awareness, Teaching, Research, and Implementation: Human Rights education, Teaching and Training; Human Rights and Peace, Non-violence, and Conflict Resolution; Implementing Human Rights Standards and Required Legal Aid; Remedies and Reforms; Role of the Judiciary, Public Interest Litigation and Media.*

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 262 Law and Terrorism (2.0); 2 cr. This course will provide a systematic study of the legal definition and responses to terrorism. The course will discuss the causes and consequences of international and domestic terrorism, and explore the responses of International Law and certain national legal systems to the practices of terrorism.

The course will start with a historical overview of practices that could be identified as terroristic in nature, such as assassinations, piracy, kidnapping, and banditry. It will then focus on terrorism, as a theoretical concept, and the efforts to formulate legal definitions of terrorism in International Law. In this context, the course will analyze the discourses on the right to self-determination, both in domestic and international contexts. Part of this inquiry will focus on the history and theory of political crimes, and whether such crimes are distinguishable from common criminal acts.

A significant part of understanding the idea of political crimes will be to discuss the theories of the economic and social reasons for terrorism, and what some have called the "pathologies of terrorism" of the psychology of terrorism. The course will also study the arguments for and against the idea of state terrorism (the idea that states can commit the crime of terrorism by economic or military warfare). The second half of the course will focus on international and national responses to terrorism. In examining the international responses to terrorism, the course will analyze several international instruments, such as the hijacking convention and the convention for the protection of diplomats, which seek to combat specific acts of terrorism. Also studied will be the liability of states for state-sponsored terrorism and rights of victims to compensation.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 263 Islamic Law (2.0); 2 cr. This course introduces students to the field of Islamic Law. It is designed to give students a firm grounding in the principles, concepts, and terminology of Islamic Law. Islamic Law is one of the oldest and most significant systems of Law in the contemporary age. The course will focus on the history, theory, and the role of Islamic Law in the contemporary age. The course will be divided into two main parts: the first will deal with Islamic Law in the classical context while the second will examine the role of Islamic Law in the contemporary age. This course will begin by considering the question: "Why study Islamic Law?" It will then proceed to the history and theory of the Islamic Legal System with special emphasis on the development of the various schools of thought in Islamic Law. The course will place Islamic Law in a

comparative context and investigate whether the methodologies, processes, and purposes of Islamic Jurisprudence are fundamentally different from other major world legal systems. The second half of the course will survey Islamic Commercial, Criminal, and Family Laws, and their influence on the modern age. Furthermore, Islamic Public International Law, Human Rights, and Islamic Law will be examined.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 264 Environmental Law (2.0); 2 cr. This course examines Lebanese and Comparative Environmental Law and serves as a useful introduction both to the particular complexities of Environmental Law and to the skills necessary in mastering any complex area of regulation. The first part of the course considers the character of environmental disputes, the problems inherent in fashioning legal rules for their resolution, and the history of the emergence of modern comparative Environmental Law. The second part of the course reviews several specific Lebanese and comparative environmental statutes. All the statutes serve as illustrations of the different regulatory approaches to environmental problems: command and control, information disclosure, and market-based instruments.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 265 Canon Law (2.0); 2 cr. The purpose of this course is to introduce students to ecclesiastical law through a systematic presentation and study of the code of Canon Law on the purpose, nature, content, history, and consequences of what ecclesiastical law achieves in the life of the Church. The course surveys the norms of the Code of Canon Law in the areas of general norms, the rights of obligations of the Christian faithful, Church structures, and the teaching and sanctifying offices of the Church, temporal goods, sanctions, and procedural law. This course is focused on the nexus between law and ministry, the relationship between theologies of the Church, and the expression of these theologies within the law itself.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 301 Civil Law IV: Obligations and Contracts - Regime (3.0); 3 cr. The Law of Obligations and Contracts is one branch of Private Law under the Civil Law legal system. It is the body of rules that organizes and regulates the rights and duties arising between persons within society. The course examines the legal regime of Obligations and Contracts. It will provide a study of the classification of Obligations and Contracts. Specific terms and conditions will be examined, especially matters affecting the legal regime of Obligations and Contracts, discharge of contracts, illegality, remedies, third-party rights, execution of contracts, indirect action, revocatory action, and vicarious liability action. *Prerequisite:* Law 203.

This lecture is supported by a workshop that helps students understand the course.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 302 Civil Law V: Special Contracts I (3.0); 3 cr. This course will endeavor to provide students with an understanding of the following contracts:

- FIDIC;
- BOT;
- Transaction;
- Compromise;
- Aleatory Contracts;
- Know-how;
- Leasing;
- Factoring; and
- Franchise.

Prerequisites: LAW 203, LAW 301

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 303 Civil Law VI: Special Contracts II (4.0); 4 cr. The course is designed to introduce students to the key concepts and theories of Special Contracts. The course explores the following topics: introduction to special contracts, comparison between nominate and innominate contracts, domestic and international sales agreement, lease, agency, and contracting agreement. *Prerequisites:* LAW 203, LAW 301.

This lecture is supported by a workshop that helps students understand the course.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 304 Commercial Law I: Commercial Acts, Traders, Goodwill (3.0); 3 cr. This course is designed to introduce to students the key concepts and theories of Commercial Law. The course explores the following topics: specificity of Commercial Law, sources of Commercial Law, commercial acts (i.e. distinction between civil acts and commercial acts, objective commercial acts, subjective commercial acts, commercial acts by their form, mixed commercial acts), traders (i.e. quality of trader, statute of trader, legal obligations of trader), goodwill (generalities, elements, legal nature, contracts concerning goodwill), sale, pledge, lease, management, and contribution (i.e. allowance) in kind.

This lecture is supported by a workshop that helps students understand the course.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 305 Commercial Law II: Corporate Law (4.0); 4 cr. This course will provide students with an understanding of the following topics:

- Introduction to Corporate Law (terminology: legal nature of the commercial company; different kinds of commercial companies; regulation of commercial companies);
- General Theory of Commercial Companies;
- Partnership;
- Private Company;
- Limited Liability Company;
- Jointly-owned Company;
- Joint-stock Company;
- Company Limited by Shares;
- Limited Partnerships Company;
- Company with Variable Company;
- Close-ended Company; and
- Holding Company; Off-shore Company.

This lecture is supported by a workshop that helps students understand the course.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 306 General and Lebanese Administrative Law II (3.0); 3 cr. This course is designed to introduce to the students the key concepts and theories of Administrative Law, to improve their knowledge in form and in depth of administrative principles, procedures, and acts taken by the public administration. The course aims to help students achieve a better understanding of administrative concepts and the making of administrative decisions through explaining the different jurisprudential verdicts, a major source of administrative principles. This course will identify and compare the Lebanese Administrative System to its homologue, the French, as well as the different systems adopted by different regimes.

This course explores the following topics: introduction to public administrative law, administrative rights and legalities, principle of legality, discretionary authority, exceptional circumstances, governmental acts, administrative court's jurisdiction over administrative decisions, theory of error, structure of the public administration, executive authority, president, prime minister, ministers, council of ministers, central administration, centralized system, non-exclusivity concept, decentralization (i.e. political and administrative), history and sources of Lebanese administration, administrative organizations, and administrative courts, and municipalities. *Prerequisite:* LAW 206.

This lecture is supported by a workshop that helps students understand the course.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 307 Civil Procedure Law II (3.0); 3 cr. This course covers:

- The stages of litigation;
- The opportunities and challenges of litigation, involving multiple disputants;
- The general theory of judgments;
- The general theory of remedy at law; and
- Law of evidence, including the rules and doctrines regulating the presentation of factual proof in Lebanese law.

Prerequisite: LAW 207.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 308 Special Criminal Law (3.0); 3 cr. The course examines the following infractions against the:

- Internal and international public safety;
- General and judicial (forced) administration; Religion;
- Family, persons (life, civic liberty, and honor);
- Goods (robbery, swindle, breach of trust, fraudulent bankruptcy, counterfeiting); and
- Intellectual property.

Prerequisite: LAW 208.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 309 Public International Law (4.0); 4 cr. This course introduces students to the legal rules and institutions that govern the international political system. The course provides a formal introduction to International Law and emphasizes the relationships between law and politics in the behavior of states, institutions, and individuals in International Law. International Law is both more relevant and more interesting today than ever before. This course examines how International Law is created, how it operates, and what effect it has on these and other issues in contemporary international relations. The first part of the course examines the nature, sources, and methods of International Law, the relationship between International Law and Domestic Law, the determination of international responsibility and the revolution of international disputes, and the bases of national jurisdiction over international conduct, the key institutional actors, and the relationship between International Law and international systems. In the second part of the course students will have the opportunity to study select substantive fields of International Law, including the rise of force and the laws of war, human rights, international criminal law, and international trade law. Where relevant, the course will follow current events.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 310 Criminal Procedure Law (3.0); 3 cr. The course examines the following topics:

- Public Prosecution and Civil Action;
- Judicial Investigation;
- Investigating Jurisdictions;
- Inquiries and Identity Checks;
- Trial Courts (organization - competence - procedure);
- Judgment and Remedy at Law;
- Specific Procedure;
- International Judicial Co-operation;
- Extradition;
- Protection of Witnesses; and
- Execution Procedures.

Prerequisites: LAW 208, LAW 308.

Language of Instruction: Arabic (legal terms, however, are given in English and French).

LAW 311 Public Function: (1.0); 1cr. The course on Public Function studies the regulations of all public officers working for the public sector, in addition to those whose remuneration is related to the public funds. This is referred to the study of the following themes: the categories of public officers, the bodies, the employment frameworks, occupations, and ranks, the career, access to the public function (i.e. recruitment, training and initial education, tenure), career development (i.e. remuneration, posts, continuing education, evaluation, advancement, and promotion), leaving the public function, the public officer's rights and guarantees, the public officer's obligations, and the officer's retirement.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 350 Personal Status (3.0); 3 cr. This course covers personal status laws and regulations of the various Lebanese religious groups recognized officially by the Lebanese Constitution. The course examines the following topics:

- Marriage;
- Betrothal;
- Divorce;
- Limited Divorce (a mensa et thoro separation);
- Filiations;
- Minority;
- Guardianship (wardship);
- Alimony; and
- Personal Status Courts, (organization, procedure, judgments).

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 351 Legal Terminology (3.0); 3 cr. This course in Legal Terminology is a basic guide to common legal terms in Arabic, English, and French. Different terms may have different meanings based on the specific legal system and a specific area of law on the context in which they are being used. The course is a comprehensive source of those different meanings and use for thousand of today's most common legal terms, concepts, definitions, events, movements, and cases.

Language of Instruction: Arabic, English, and French.

LAW 352 Measures of Execution (3.0); 3 cr. This course examines the following topics:

- Concept of enforceable judgment;
- Concept of writ of execution;
- Distress;
- Enforcement of award;
- Granting recognition to a foreign judgment; and
- Granting recognition to a domestic and international arbitration award.

Prerequisites: LAW 207, LAW 307.

Language of Instruction: Arabic (legal terms, however, are given in English and French).

LAW 353 Intellectual Property Law and WTO (3.0); 3 cr. This course covers all the main forms of intellectual property, principally, copyright, trade mark and unfair competition, and patent, but will also touch on geographical indications and trade secrets. It explores the theoretical foundations of and justification for the different rights as well as their application in a number of settings. Intellectual property industries now make up a sizable proportion of the global economy and the most contested issues in Intellectual Property Law are closely connected to developments throughout the arts and technology, as well as to evolutions in marketing and popular culture. Because the content of Intellectual Property Law is increasingly framed by international obligations and evolves with some regard to developments in other countries, the course also has an international and comparative dimension, and examines WTO rules.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 360 Contract in Common law (2.0); 2 cr. The law relating to contracts is one of the pillars of the Common Law System. An understanding of the basic elements of Contract Law is thus a critical prerequisite for the study of a number of later subjects, including Corporate Law, Commercial Transactions, and International Arbitration. This course aims to provide students with an understanding of the basic principles of Contract Law in Common Law, which applies to nearly all contracts. In fulfilling this aim, the course focuses primarily on a study of relevant case law and statute law. The course covers the elements of contract negotiations, contract formation, and contract

drafting. Specific terms and conditions will be examined, especially matters affecting consent to a contract, discharge of contracts, illegality, remedies, and third-party rights. The objectives of the course include:

- To provide students with an understanding of basic principles of Contract Law in Common Law; and
- To develop in students an ability to analyze fact situations and correctly identify the relevant principles of Contract Law in Common Law that are applicable to the resolution of problems raised by particular factual situations.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 361 Tort in Common Law (2.0); 2 cr. This course explores the basic principles governing private lawsuits for damages for wrongs that are non-contractual, including consideration of the concepts of strict liability, liability based on fault, intentional and negligent interference with personal and property interests and defenses thereto, recoverable damages and related problems. The course concerns the civil causes of action and remedies for interference with one person, property, or intangible interests. This course will examine the doctrines of both intentional and unintentional torts, including assault, battery, trespass, false imprisonment, conversion and intentional infliction of emotional distress, negligence, and strict liability. By contrasting the different theories of liability, especially negligence and strict liability, the course will explore differing views of the basic purpose of the tort system and analyze the consequences of different rule structures in preventing accidents and compensating victims.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 362 Property, Equity, and Trust in Common Law (2.0); 2 cr. This course explores the foundations of the institutions of Property, Equity, and Trust. It combines conceptual and functional analyses of doctrine with more abstract theoretical enquiry.

The chief aim of the course is to provide students with a sound understanding of the fundamental principles of Land Law and the role that equitable doctrine plays in molding and developing Property Law. Students will be expected to come to grips with key common law principles, examine and appreciate the role of equitable doctrine, and understand the legislative framework and its application where applicable. The course explore the:

- Property Boundaries (conceptual and functional analysis of property);
- Justifying Property (mainstream and novel defenses and critiques of property);
- Trust (the distance contribution of trust and fiduciary institutions in blurring the lines between proprietary and personal claims; trust systems in Common Law and civilian jurisdictions); and
- Equity (origins of Equity, native title, contracts for sale of land, part performance, legal interests, appropriate application of a range of equitable doctrines to particular scenarios and the availability of different remedies).

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 363 French Jurisdictions and Competence Rules (2.0); 2 cr. This course examines the French Judiciary System. It explains the competence, the organization, and the functioning of the following jurisdictions: court of cassation, court of appeal, court of first instance, simple judge, specialized non-criminal courts, commercial court, judge of labor disputes, jurisdiction of social security, judge of expropriation, judge of lease disputes, juvenile court, and criminal courts.

Language of Instruction: French (legal terms, however, are also given in English and Arabic).

LAW 364 Law and Medicine (2.0); 2 cr. Medical Law is the branch of law, which concerns the prerogatives and responsibilities of medical professionals and the rights of the patient. The main branches of Medical Law are the law on confidentiality, negligence, and torts in relation to medical treatment (most notably medical malpractice), and Criminal Law in the field of medical practice and treatment. Because Ethics and Medical Practice is a growing field, students in this course will explore issues in Medical Ethics and Law that are ripped from the headlines and fall under the broad umbrella of "reproduction."

Topics include:

- Forced sterilization;
- High-tech baby-making;
- Embryos and divorce;
- Age limits on access to assisted reproductive technology;
- Abortion;
- Civil liberties during pregnancy;
- Conflict in the neonatal intensive care unit;
- Defining parenthood donation; and
- Selling or buying organs for transplantation.

The course will also evaluate the ways that the individual choice norm has been extended to or withheld from individuals who have lost competence or who (because of mental impairment) had never been or (because they were infants or fetuses) had not yet become competent to decide for themselves. The course will further explore how the institutions of law and medicine have sought to approach and, when possible, resolve the dilemmas. Course materials will include: articles from newspapers, magazines, medical journals, law reviews, excerpts from books, casebooks, and court cases.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 365 Philosophy of Law (2.0); 2 cr. This course will explore a cluster of issues, concerning concepts, conceptual grasp, and incomplete and incorrect understanding of concepts. The class will range across philosophy of mind and language, meta-ethics, philosophy of law, and other areas. The course will also provide a systematic study of the rule of law. One of the most enduring questions in legal theory is the extent to which legal arguments is, can be, or should be rational. Some vigorously maintain that it can and should be rational (even when in particular instances it is not). Others are deeply skeptical about claims to legal rationality. Often this debate is framed as a dispute about whether the rule of law is a realizable, viable, valuable ideal for lawyers, judges, and citizens. This course will explore those closely related ideas of legal rationality and the rule of law. To investigate these abstract themes in concrete detail, the course will examine the characteristic types of Romano-Germanic and Anglo-American legal argument and legal interpretation: deductive inference (often used in legal interpretation), inductive inference (often used in reasoning about evidence), analogical inference (often used in reasoning from precedent), and inference to the best explanation (used in both reasoning about evidence and in reasoning about how to characterize a fact pattern from a legal standpoint). Readings will be from relevant areas in philosophy, judicial opinions, and jurisprudence.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 366 Negotiation and Mediation Workshop (2.0); 2 cr. This workshop, by combining theory and practice, aims to improve both the participants' understanding of negotiation and mediation, and their effectiveness as negotiators and mediators. Drawing on work from a variety of research perspectives, the readings and lectures will provide students with a framework for analyzing negotiations, tools, and concepts useful in negotiating more effectively. Participants will spend much of their time in a series of negotiation exercises and simulations, where, as negotiators, mediators, and critical observers, they will become more aware of their own behavior as negotiators and mediators, and learn to analyze what works, what does not work, and why.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 367 Comparative Consumer Protection Law (2.0); 2 cr. The law of consumer protection governs every purchase you make, every advertisement you see, and every student loan in your expanding portfolio. It may be the single most relevant body of law to your own experience and your everyday life. Yet, somehow you have not learned in law school whether it would be better to buy that casebook with a credit card or a debit card, or whether it is legal for a telemarketer to call and offer you a new low rate on a warranty for your car, or what it is you were supposed to ask before you signed that loan application. This course will explore the theoretical underpinnings of Consumer Protection Law as it has developed over the past century and as it operates (or fails to operate) today. The course will examine constitutional issues governing Consumer Protection Law. It will provide an introduction to the substantive law of predatory lending, debt collection, and product warranties. It will explore the application of Consumer Protection Law to emerging technologies.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 368 International Economic Public Law (2.0); 2 cr. This course provides a comprehensive grounding in all aspects (i.e. domestic, comparative, and international) of sources and guiding principles of the Economic Public Law, and examines the structures and modalities of the intervention of the public sector in the economy: planning, regulation, and control of the competition, direct public interventions (i.e. public enterprise, privatization, public aid), and the public-private partnership (PPP).

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 369 Legal Writing (2.0); 2 cr. Legal Writing is an intensive writing lab that builds on the skills you acquired in your legal courses, using varied assignments from transactional, litigation, and legislative practice. In a supportive and collaborative classroom environment, you will learn about drafting statutes, contracts, complaints, answers, motions and nice motions, orders, interrogatories, general correspondence and opinion letters. You will also re-examine, and take to a higher level, aspects of the types of writing you did in your legal courses. For example, you will work on objective issue statements and persuasive questions presented, objective and persuasive fact statements, and the large-scale organization of the discussion sections of research memos and the argument sections of briefs.

This course is a bridge between the other legal courses, because it teaches the skills necessary to analyze legal issues in any area of law. Specifically, the course should help students improve the following skills:

- Analyzing and conceptualizing legal issues;
- Organizing strategies; structuring legal arguments and documents;
- Using core writing techniques, including clarity, cohesion, and concision;
- Writing strong introductions and conclusions;
- Mastering objective vs. persuasive techniques;
- Using new editing techniques; and
- Sharpening efficient writing and editing skills, using timed assignments.

Language of Instruction: English and Arabic.

LAW 370 Information and Communications Technologies (2.0); 2 cr. The integration of Information and Communications Technologies (ICT) in our daily activities enables businesses and individuals to inform, communicate, and engage in transactions. This opens up a wide spectrum of opportunities and a variety of legal and regulatory issues. The course examines the relationship between ICT and Law in three principle areas:

- ICT Law: The first area develops the different ICT generations (data processing, multimedia, internet, social media, mobile, etc.)
- Lebanese ICT laws
- International ICT laws (Europe, USA, and others): The second and the third areas examine ICT laws at a national and international level. The following topics will be covered:
  - *Digital rights, privacy, and security (right to data protection, how data processing should be regulated in the information society, etc.);*
  - *Intellectual property;*
  - *Media and electronic communications regulation (regulation of media and communications, content regulation of print media, broadcasting, and problems relating the convergence of media and communications);*
  - *Media Law (legal regulation of mass media publication, principally the press, the broadcast media and institutionalized internet publication, etc.);*
  - *Internet Law;*
  - *Electronic Commerce Law (jurisdiction, payment systems, interfacing ICT Law and Commercial Law, etc.); and*
  - *Electronic Government Law.*

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 371 Mergers and Acquisitions Law (2.0); 2 cr. A merger or large acquisition is often the most significant event in the life of a firm and can have dramatic consequences for all the constituencies of a firm – from shareholders, directors, and managers to employees, customers, and communities. Lawyers and the Law play critical roles in how mergers and acquisitions are evaluated, structured, and implemented. This course introduces students to Contract, Corporate, and Securities Law issues relevant to mergers and acquisitions of large companies, both public and private. It also touches on the basics of antitrust procedure relevant to a lawyer working on such transactions. The approach is practical rather than theoretical and the focus is on Law, not finance.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 401 Civil Law VII (4.0); 4 cr. This course studies the following topics:

- Landed estate;
- Real property right;
- Altasarrouf right;
- Easement rights:
- Usufruct (freehold) right;
- Al-Waqf (religious endowment);
- Land lease;
- Personal guarantee; real guarantee (real estate mortage- lien); and
- Land register (definition - constitution and organization - delimitation and censu - effects of registration).

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 402 Civil Law VIII: Inheritance, Will, and Donation (3.0); 3 cr. This course examines the following topics in the various Lebanese religious groups recognized by the Constitution:

- **Inheritance:** Opening of a succession, maturity of a succession, degrees (ranks) of heirs, capacity to inherit, regulations of absent, forms of a succession such as intestate succession, estate in escheat, succession bestowed by will, succession accepted with beneficio in ventarii, disposal of an estate, executor administrator, and settlement of a succession;
- **Will:** Reading of a will, testamentary capacity, disposable portion, legatee, forms such as authentic will, holograph will, nuncupative will, and joint venture will, and executor of a will; and
- **Donation:** Validity, animus donandi, promise of donation, forms such as donation mortis causa, specific legs, general legacy, concealed donation, donation through an intermediary, manual donation, and donation partition, and defeasance of donation.

Prerequisites: LAW 203, LAW 301.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 403 Commercial Law III: Commercial Contracts, Negotiable Instruments (3.0); 3 cr. The course explains the following topics:

- **Commercial Contracts:** (commercial security, commercial agency, brokerage agreement); and
- **Negotiable Instruments:** Bill of Exchange and Promissory Note: (mentions, forms, provision, endorsement, acceptance, backing, maturity, intervention, multiples copies, distortion, period of limitation); and
- **Check:** (creation, form, mentions, transfer, endorsement, crossed check, multiple copies, period of limitation, criminal legal provisions).

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 404 Commercial Law IV: Bankruptcy (2.0); 2 cr. This course endeavors to provide students with an understanding of the bankruptcy laws, including the Law of Corporate Reorganization. Topics include:

- The procedure and the judgment of bankruptcy;
- The appointment of the liquidator;
- The period of suspicion;
- The concordat and preventive, rights of creditors in bankruptcy;
- The individual's right to discharge;
- The treatment of executory contracts and bankruptcy planning; and
- The procedure of "to be put into receivership."

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 405 Private International Law I: Conflict of Laws (3.0); 3 cr. The course examines the following topics:

- Definition, nature, and scope of Private International Law, its relation to International Law;
- General historical development of the doctrines of Private International Law; and
- The conflict of laws theory: rules of conflict, classification and qualification, public policy, falsity before the law, rules of the foreign law.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 406 Private International Law II: Conflict of Jurisdictions, Nationality, Foreigners' Regulations (3.0); 3 cr. The course examines the following topics:

- **The Conflict of Jurisdictions:** International judicial competence, effects of foreign judgments - grant of exequatur to a foreign judgments;
- **Nationality:** Acquisition and loss of nationality, restoration of nationality, naturalization; and
- **Foreigners' regulations.**

Prerequisites: LAW 405.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 450 Money, Banking Law, and Islamic Finance (3.0); 3 cr. The course examines the following topics:

- Explanation of banking regulations: Regulations of the Central Bank, commercial banks, and the financial and depositary institutions;
- Explanation bank transactions and money market operations;
- Description of the different payment systems;
- Explanation of the securities regulation:
  - *To reduce the level of risk to which bank creditors are exposed (i.e. to protect depositors);*
  - *To reduce the risk of disruption, resulting from adverse trading conditions for banks causing multiple or major bank failures; and*
  - *To reduce the risk of banks being used for criminal purposes, e.g. laundering the proceeds of crime and especially laundering money.*
- Explanation of the bank regulators supervision, examination, and enforcement tools;
- An Explanation of the banking secrecy laws in Lebanon and abroad; and
- Explanation of the Islamic banking system (or Shari'a compliant finance): in terms of principles, advisory councils and consultants, financial accounting standard, and Islamic financial transactions.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 451 Labor Law and Social Security (3.0); 3 cr. This course will focus on the statutory, judicial, and administrative law governing the individual Employment Law and the collective organization of workers and the interaction between such collective organizations and employers. The course will introduce students to the basics of traditional Labor Law and will explore how Labor Law is evolving both to innovate forms of labor management relations and to changes in the composition of the Lebanese labor force. The class will consider the legal status of privately negotiated processes for organizing and recognizing unions, state, and local approaches to Labor Law innovation, and new forms of workplace organization. This course will explore the intersection of Labor and Immigration Law, union participation in the political process, emerging forms of worker organization, and security of tenure. The course will study the regulations of Social Security in Lebanon and abroad.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 452 Lebanese Finance and Taxation Law (2.0); 2 cr. Taxation pervades every area of life, including property, family, employment, and business affairs. Tax Law is well suited to interdisciplinary study, intersecting as it does with economics and politics. It also offers rich opportunities for the study of many areas of law, given that tax factors have frequently influenced development of legal concepts and principles. In turn, tax laws are shaped by concepts of property, commercial, corporate, and employment law, approaches to drafting and interpretation of legislation. This course introduces students to selected issues in the law of taxation, chosen to illuminate fundamental concepts and to link to other parts of the undergraduate law course. The focus is on Tax Law, but the technical issues are examined by focusing on themes and principles, and by placing the law within its political and economic context to create an understanding of the requirements of a tax system and the difficulties encountered in designing, legislating for, and administering such a system.

Language of Instruction: Arabic (legal and technical terms, however, are also given in English and French).

LAW 453 Air and Maritime Law (3.0); 3 cr. In terms of Air Law, this course provides a general introduction to the Air Law approach and applies some basic concepts of the Civil and Common Law traditions to the field of Air Law. The main topics covered include:

- The nature of the contract of carriage;
- Aircraft manufacturer's liability;
- State liability for negligent certification of aircraft;
- Air traffic controllers liability;
- Liability for damage caused by aircraft on the ground; and
- Contentious and non-contentious work with respect to airliners, aircraft owners, and carriers.

The course examines the unification of Private International Air Law through the adoption of international conventions. In particular, it reviews the liability of the air carrier toward passengers and shippers under the Warsaw Convention System and under the Montreal Convention of 1999. This course also examines the basic framework of several other conventions, notably the 1952 Rome Convention on surface damage caused by aircraft, and the two conventions adopted by the ICAO in 2009 to replace the Rome Convention

(the Unlawful Interference Convention and the Ground Damage Convention). Jurisdictional and choice of law issues in relation to matters not covered by international agreement, notably manufacturers' liability, will be reviewed.

Maritime Law: This course covers principles, rules, norms, and sources of Maritime Law, including:

- Acquisition, ownership, registration, and related sale/purchase agreements of all kinds of ships, container carriers, feeder vessels, and modern wreck;
- Master and crew; the operation of skip, including statutory requirements; navigation and collisions; salvage; towage;
- Pilotage;
- Oil pollution liability; and
- Charter party dispute; contentions work with respect to damages to goods, wrecks, oil spills, marine insurance, contentious and non-contentious work with P&I clubs.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 454 Arbitration Law (3.0); 3 cr. In recent years, the use of arbitration as a means of resolving domestic and international disputes has grown enormously in popularity. Arbitration is used for all kinds of disputes: from purely business-related disputes, which cross borders, and mixed disputes between foreign investors and hot states to disputes between sovereign states. There is a discrete body of Domestic and International Law devoted to arbitration issues, and there are a number of specialist arbitration institutions. This course provides a rigorous study to the field of International Arbitration, which has become the default means of international commercial disputes. The course will deal with the internationalist elements of the subject matter, but will also examine international commercial arbitration from a Lebanese and comparative perspective. Students can expect to review both Lebanese and foreign commentaries, statutes, and case-study method on the subject.

The course will comprise the following main topics:

- Introduction to domestic and International Commercial Arbitration;
- Arbitrability;
- The arbitral tribunal;
- Conduct of arbitral proceedings (place of arbitration, preliminary steps, written submissions, evidence, hearings and proceedings thereafter, and fast track arbitration;
- The role of council, the parties, witnesses, and others in arbitration;
- Applicable laws to the arbitration procedure, to the substance, and to the agreement to arbitrate;
- Role of national courts in International Commercial Arbitration;
- Arbitral award/challenges to award/ recognition and enforcement;
- New developments and a comparison of arbitration legislation around the world, and
- Investment arbitration; Arbitration and States.

Language of Instruction: English (legal terms, however, are also given in Arabic and French). This lecture is supported by a workshop that helps the students to understand the course.

LAW 460 Risk and Insurance Law (2.0); 2 cr. A study of risk and the risk management process begins the course. Types of applications to risk management include commercial risk, personal risk, and public risk. Each kind of insurance product is described fully and analyzed within the current marketplace. The course provides in-depth analysis of the processing, investing and evaluation of risk management. This course will also provide students with an understanding of:

- How insurance works, what types of risks are suitable for private insurance and what risk a characteristics are "uninsurable";
- How to read and interpret an insurance policy;
- Fundamentals principles and characteristics of property and casualty insurance;
- What is a liability insurer's "duty to defend";
- What is a "reservation of rights" and what are its consequences to insurer and to insured; and
- Multiple theories of insurer extra contractual liability (i.e. "Bad Faith" Law).

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 461 Economic Analysis of Law (2.0); 2 cr. What effects does Law have? Do individuals drive more cautiously, clear ice from sidewalks more diligently, and commit fewer crimes because of the threat of legal sanctions? Do corporations pollute less, market safer products, and obey contracts to avoid suit? And given the effect of legal rules, which are socially best? Such questions about the influence and desirability of laws have been investigated by legal scholars and economists in a rigorous and systematic manner since the 1970s. Their approach, labeled "economic," is widely considered to be intellectually important and to have revolutionized thinking about the Law. This course will provide an in-depth analysis of the major building blocks of our legal system: Tort Law, Property Law, Contract Law, Criminal Law, and the legal process. The course will also address welfare economic versus moral conceptions of the social good. The course is aimed at a general audience of students. A non-economic background is required to take this course.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 462 Criminology and Prison Law (2.0); 2 cr. Why are criminal laws made? Why are they broken? How do we, and how should we, react to the breaking of criminal laws? These three questions are the stuff of criminology. They also occupy a central and controversial place in public and political debates about the condition and future of contemporary liberal democratic societies. This course provides students with the chance to study them in depth. Criminology offers students an opportunity to study crime and the ways in which it is dealt with by the criminal justice and penal systems. It enables students to explore the nature of crime and its control by examining the issues at stake using the resources of legal, penal, and social theory. It also offers students the chance to think about crime as a social phenomenon and to explore, using criminological research and analysis, how criminal justice and penal systems operate in practice. This course focuses also on the law and policy of incarceration, the "back end" of the criminal justice system. The central questions are: As a legal matter, what obligation does the state have toward those it incarcerates? And given legal limits, how should we run the prisons?

Topics to be covered include:
The history of prisoners' rights litigation;

- The scope of prisoners' constitutional rights; and
- The prison disciplinary process; conditions of confinement; medical care; and problems of prison rape and overcrowding.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 463 International Criminal Law (2.0); 2 cr. After a brief survey of the history of International Criminal Law and the development of international criminal courts, the course will examine the problem of sources and goals of international criminal justice. Alternative responses to mass atrocities will be explored. Genocide, crime against humanity, war crimes and the crime of aggression will then be examined in some details. Next, the attention of the course will focus on the departures of international criminal procedure and evidence from forms of justice prevailing in national law enforcement systems. The course will end with an analysis of special difficulties encountered by international criminal courts. *Prerequisites:* LAW 208, LAW 308.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 464 International Humanitarian Law (IHL) (2.0); 2 cr. This course explores the development and operation of International Humanitarian Law (IHL), which is the body of Public International Law that regulates conduct during armed conflict. Although IHL is the expression most widely used, the same body of law is often, and more correctly, referred to as Law of Armed Conflict (LOAC), and occasionally referred to as Law of War or Jus in Bello. International Humanitarian Law is the body of law that regulates armed conflict. It seeks to limit the effects of armed conflict by regulating the means and methods of warfare and by protecting persons who are not or are no longer participating in the hostilities. IHL has long been a part of Public International Law, but has only been subject to treaty since the end of the 19th century. Traditionally, conventional IHL has been divided into the Law of the Hague (concerned with methods and means of warfare) and the Law of Geneva (concerned with protection of victims of war). While most IHL treaties were designed to regulate armed conflict between states (i.e. international armed conflict), the trend in 21st century warfare has been toward internal armed conflicts that often involve the armed conflicts of when the Geneva Conventions and their Additional Protocols were created. As a result, a significant portion of the course will be devoted to examining the challenges of post-20th-century armed conflict. IHL is related to other fields of Public International Law, in particular to International Criminal Law and to International Human Rights Law. The precise boundaries between these fields are a subject of continuing debate. The course will consider the modern dynamic of these bodies of law, and more importantly, examine how they may affect future military operations.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 465 Corporate Governance Law (2.0); 2 cr. This course will address corporate governance from an organizational and institutional point of view: It will illustrate how corporate governance has evolved over time and will cover both theory and relevant practices. In terms of content, the course will:

- Highlight the main issues of corporate governance (e.g., the business structure of the firm; institutional investors' role in the private and public corporation; the relationships between the owners, the board, and firm management; and the relationships between the company and its major stakeholders);
- Provide concrete examples of "good" and "bad" corporate governance; outline key principles of corporate governance; present the main tools for assessing corporate governance practices; and
- Discuss the relevant theories underlying corporate governance practices (e.g., theories of organizations, institutions, governance, organizational behavior, leadership, new institutional economics, power, and agency).

Prerequisites: LAW 305.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 466 Constitutional Justice (2.0); 2 cr. This course addresses the birth and development of Constitutional Justice in the world. The course examines the different systems of Constitutional Justice in Lebanon, France, the USA, UK, etc., the Constitutional Council and its organization, the conditions for applications and forms of redress before the Constitutional Council, the Council's decision, and the reference material (i.e. the constitutional bloc, organic laws, and principles of constitutional value.)

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 467 Administrative Justice (2.0); 2 cr. The aim of this course is to present Administrative Justice, its particularities and the regimes applicable to the different methods of recourse against administrative decision. The course will be divided into four parts:

1. The organization of administrative tribunals, the different types of tribunals and their jurisdiction.
2. The principal characteristics of Administrative Justice: The principle of separation of powers and the characteristics of administrative procedure.
3. The different forms of redress and the regime of each form.
4. The procedural requirements for submitting an application (the initial decision by the administration, the deadlines, the forms of appellate review, etc.).

Prerequisites: LAW 206, LAW 306.

Language of Instruction: Arabic (legal terms, however, are also given in English and French).

LAW 468 Oil and Gas (2.0); 2 cr. The course provides a comprehensive grounding in all aspects of the oil and gas industry. After a broad overview of the distribution of petroleum resources and the organizations that constitute the industry, it introduces the techniques used to detect and assess the commercial viability of deposits. Next, it looks at the extraction process and the technologies used to process, store, transport and refine oil and gas. Finally, it explores the processes of selling, trading, and marketing gas and petroleum products, before finishing with a survey of environmental and geopolitical risks and opportunities, and an assessment of the industry's future.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 469 Corporate Insolvency Law (2.0); 2 cr. The course begins with an overview of the functions of insolvency procedures. It then examines, in the context of winding-up, the relationship between Insolvency Law and the general law of property, contract, obligation, and the extent to which Insolvency Law interferes with rights accrued under the general law, and examines the rationality of the legal principles underlying the rules relating to the treatment of claims and the distribution of assists in winding up. The course then turns to consider procedures that are capable of securing the continuation of viable businesses, often referred to as corporate rescue. The most significant of these is the administration procedure, but administrative receivership, which it is gradually replacing, is also still of some practical importance. They raise interesting and complex questions about the allocation of decision-making power and the mechanisms for ensuring the accountability of decision-makers. More informal procedures, in particular schemes of arrangement, are also considered. Company Law also has a role to play in relation to insolvent companies, raising in particular such questions as the liability of a parent for the debts of its subsidiary and the responsibilities of directors under general law and under insolvency legislation.
Prerequisites: LAW 305, LAW 404.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 470 Water Law (2.0); 2 cr. Water Law presents a mix of Lebanese and Comparative regulatory regimes over a resource that is scarce yet ubiquitous and, of course, essential to life. This course will consider different rights and regimes for water, including prior appropriation, riparian rights, and groundwater rights. It will also look at how the public trust doctrine and environmental protection can affect those water rights. The course will compare the view of water as a human right.

Although the course considers Water Law at a national level, the objective will be not just to learn how water is regulated, but also to develop an understanding of the benefits and flaws of the various rights regimes in order to predict how water should be regulated as it becomes an increasingly scarce resource.

Language of Instruction: English (legal terms, however, are also given in Arabic and French).

LAW 495 Thesis: Graduation Project Guidelines; 0 cr. Students in the fourth year of the program shall write a thesis. The guidelines are the following:

- The student shall choose an advisor and select in coordination with the advisor a topic for research;
- The student shall choose the language of the thesis: English, Arabic, or French;
- It is the responsibility of the student to prepare a clear proposal on the selected topic;
- Select in coordination with the advisor two readers to be members of the committee;
- The advisor shall submit the names of committee members to the Dean of the Faculty;
- The student shall work closely with the advisor securing his/her approval for every chapter written before passing it to the readers;
- Once the advisor and the readers have reviewed the thesis, the advisor shall inform in writing the Dean of the Faculty about the time and place scheduled for the defense. This defense shall be open for all those interested to attend;
- Students must secure a final clearance from the Library, concerning the thesis format; and
- Students must provide 5 duly signed copies of the thesis: one to the University Library, one to every member of his or her Committee, and one to the Faculty Library.

DEPARTMENT OF GOVERNMENT AND INTERNATIONAL RELATIONS

BA DEGREE

- INTERNATIONAL AFFAIRS AND DIPLOMACY
- POLITICAL SCIENCE
- POLITICAL SCIENCE - NGOs EMPHASIS
- PUBLIC ADMINISTRATION

MA DEGREE

- INTERNATIONAL AFFAIRS AND DIPLOMACY
- INTERNATIONAL AFFAIRS AND DIPLOMACY - INTERNATIONAL LAW EMPHASIS
- POLITICAL SCIENCE
- POLITICAL SCIENCE - HUMAN RIGHTS EMPHASIS
- POLITICAL SCIENCE - NGOs EMPHASIS
- PUBLIC ADMINISTRATION

DEPARTMENT OF GOVERNMENT AND INTERNATIONAL RELATIONS (DGIR)

Professor: Sensenig, Eugene

Associate Professors: Ghsoub, Dany

Assistant Professor: Al-Khawly, Nehme; Njaim, Maria.

Admission Requirements
Compliance with the University general rules and regulations applied, as appearing in this *Catalog*.

Graduation Requirements
Students seeking a Bachelor of Arts at the Department of Government and International Relations (DGIR) must complete a total of 105 credits for all majors with an overall average of at least 2.0/4.0 and a minimum average of 2.0/4.0 in the major requirements.

All GIR programs share a common pool of Liberal Arts Curriculum (LAC) including 30 credits of course work distributed as follows:

Category I. English and Arabic Communication		**9 cr.**
A. English Communication		6 cr.
ENL 213	Sophomore Rhetoric	3 cr.
And		
ENL 223	Communication Arts	3 cr.
Or		
ENL 230	English in the Workplace	3 cr.
Or		
ENL 231	Work Ready Now	3 cr.
B. Arabic Communication (one course from the following pool)		3 cr.
ARB 211	Appreciation of Arabic Literature	3 cr.
ARB 212	Advanced Arabic Grammar	3 cr.
ARB 224	Arabic Literature and Human Thought	3 cr.
ARB 231	Technical Arabic	3 cr.
ARB 306	The Modern Arabic Novel and Short Story	3 cr.
ARB 310	Arabic Theater	3 cr.
Category II. Religion		**3 cr.**
REG 212	Religion and Social Issues	3 cr.
REG 213	Catholicism	3 cr.
REG 215	World Religions	3 cr.
REG 313	The Maronites: Faith and Cultural Heritage	3 cr.
REG 314	Marriage and Family in the Catholic Church	3 cr.

Category III. Ethics (Faculty-Dependent)		**3 cr.**
ARP 329	Ethics in Architecture and Design	3 cr.
CSC 203	Information Age and Ethics	3 cr.
COA 360	Media Ethics	3 cr.
ENG 310	Ethics in Engineering	3 cr.
ENS 205	Environment, Society and Ethics	3 cr.
MGT 301	Ethics and Responsible Business	3 cr.
NUR 203	Introduction to Bioethics	3 cr.
PHL 311	Ethics and the Modern World	3 cr.
POS 345	Ethics and Leadership	3 cr.
Category IV. Citizenship		**3 cr.**
ENS 202	The Environment and Sustainable Development	3 cr.
FQM 200	Food Security and Sustainability	3 cr.
POS 201	Introduction to Political Science	3 cr.
POS 209	Citizenship	3 cr.
POS 210	Government and Politics of Lebanon	3 cr.
POS 240	Law and Society	3 cr.
POS 319	Democracy and Human Rights	3 cr.
Category V. Cultural Studies and Social Science		**6 cr.**
A. Cultural Studies		3 cr.
ARP 215	Cultural Themes in Lebanese Architecture	3 cr.
AVF 315	World Cinema Survey	3 cr.
COA 350	Current Issues	3 cr.
FAP 215	Art and Culture	3 cr.
HIT 211	History of Lebanon and the Middle East	3 cr.
HTM 201	Fundamentals of Hospitality and Cultural Tourism	3 cr.
HTM 326	Lebanon's Cultural, Heritage and Nature Tourism	3 cr.
LIR 214	Introduction to Literary Genres	3 cr.
LIR 217	American Literature to the End of the 19th Century	3 cr.
LIR 305	Novel to the End of the 19th Century	3 cr.
MUS 210	Music Appreciation	3 cr.
NTR 215	Foods and Nutrition of World Cultures	3 cr.
PHL 211	Logic and the Scientific Method	3 cr.
PHL 232	Ancient World Philosophy	3 cr.
PHL 333	Medieval World Philosophy	3 cr.
PHL 334	Modern and Contemporary World Philosophy	3 cr.
POS 225	Politics of Catholic Social Theory	3 cr.
ROC 301	Romance Cultures	3 cr.
B. Social Science		3 cr.
CSC 206	Games and Society	3 cr.
ECN 211	Principles of Microeconomics	3 cr.
ECN 212	Principles of Macroeconomics	3 cr.
ENG 210	Introduction to Engineering Economy	3 cr.
ENG 220	Engineering Innovation	3 cr.
MGT 201	Fundamentals of Management	3 cr.
MRK 201	Fundamentals of Marketing	3 cr.
PSL 201	Introduction to Psychology	3 cr.

SOL 201	Introduction to Sociology	3 cr.
SOL 316	Society and Women	3 cr.
SOL 322	Family: Sociological Perspectives	3 cr.
SOL 323	Society and Role of Global Intercultural Communication	3 cr.
SOL 313	Family Violence	3 cr.

Category VI. Applied and Life Sciences **6 cr.**

A. Applied Science		3 cr.
CSC 201	Introduction to Computers	3 cr.
CSC 202	Computers for Visual Arts	3 cr.
CSC 207	Navigating the Age of Artificial Intelligence	3 cr.
ENG 250	Robotics and Society	3 cr.
GIS 211	Principles of Geographical Information Sciences	3 cr.
MAT 203	Everyday Math	3 cr.
MIS 201	Management Information Systems	3 cr.

B. Life and Natural Sciences		3 cr.
AST 201	Discovering Astronomy	3 cr.
BIO 201	Your Body in Action	3 cr.
CHM 201	Chemistry in Everyday Life	3 cr.
ENS 201	Introduction to Environmental Science	3 cr.
HEA 201	Health Awareness	3 cr.
HEA 204	Contemporary Health Issues	3 cr.
NTR 201	Basic Human Nutrition	3 cr.
ENS 203	Biodiversity	3 cr.

MASTER'S DEGREES

Program Guidelines
The MA degrees at the DGIR require each 36 credit hours each, including a thesis. Courses are offered primarily in the late afternoon to allow students to pursue part-time employment or internship, if they so choose. The graduate programs usually require a minimum of 4 semesters of study depending on the full-time or part-time status of the student.

Admission Requirements
In addition to the University graduate admission requirements, applicants should have a BA in Political Science, Public Administration, International Affairs and Diplomacy, International Law, or other related fields.

Successful passing of the EET Entrance Exam with a minimum score of 60 is required (p. 66 general Catalog), students' undergraduate GPA of 3.0 minimum, work experience, letters of recommendation, and motivation for a career and leadership are all taken into consideration. The Faculty may require the GRE exam for non-NDU students, and the following prerequisite courses may be required of non-major applicants.

- MA in Political Science:
  IAF 211, POS 201, POS 210 or equivalent by petition.
- MA in Public Administration:
  PAD 201, POS 201, POS 210 or equivalent by petition.
- MA in International Affairs and Diplomacy:
  IAF 211, IAF 321, POS 201 or equivalent by petition.
- MA in International Affairs and Diplomacy - International Law Emphasis:
  IAF 211, IAF 401, POS 442.

Graduation Requirements:
Students seeking an MA in GIR must meet the University graduation requirements and complete one of the following two options of course work in addition to a comprehensive written and oral examination, or successful completion of 30 credits course work and 6 credits thesis. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 "Cs" per program.

The Department of Government and International Relations offers programs leading to the following degrees:

- Bachelor of Arts in International Affairs and Diplomacy
- Master of Arts in International Affairs and Diplomacy
- Master of Arts in International Affairs, International Law Emphasis
- Bachelor of Arts in Political Science
- Bachelor of Arts in Political Science - NGOs Emphasis
- Bachelor of Arts in Public Administration*
- Master of Arts in Political Science
- Master of Arts in Political Science - NGOs Emphasis
- Master of Arts in Political Science - Human Rights Emphasis
- Master of Arts in Public Administration

*Not offered at the present time

INTERNATIONAL AFFAIRS AND DIPLOMACY

THE DEGREE OF BACHELOR OF ARTS IN INTERNATIONAL AFFAIRS AND DIPLOMACY

Mission

The mission of the BA in International Affairs and Diplomacy is to provide students with a broad well-rounded education in the areas of international relations, diplomacy, international organizations, Lebanese government and politics, regional politics, basic international law, basic international political economy, and peace and security. The goal is to equip students with the higher educational skills, which will enable them to fulfill their career objectives, provide society with skilled graduates to meet diplomatic Foreign Service, and a variety of other public and private sector needs.

Program Educational Objectives

The BA program in International Affairs and Diplomacy is designed to provide students with broad knowledge in the field. Graduates are prepared to work in several areas. These include the Lebanese government, notably the Ministry of Foreign Affairs, international and regional organizations, such as the United Nations and its various agencies, multinational corporations, banking institutions, educational institutions, and, among others, media enterprises and the like.

Program Learning Outcomes

Students who successfully complete the BA in International Affairs and Diplomacy will:

- Demonstrate a clear grasp of the basic IR theories that allow them to understand international relations and the factors shaping the behavior of states and non-state actors in the international system;
- Recognize the critical role of diplomats and diplomacy in international affairs;
- Accumulate a good understanding of international organizations and be able to pursue careers with such organizations;
- Compile the necessary skills to pursue careers in diplomacy and the diplomatic service; and
- Develop a broad understanding of the array of political, economic, strategic, and cultural factors that shape international politics.

Degree Requirements (105 credits)

Liberal Arts Curriculum **30 cr.**

The LAC courses are divided into (6) categories:
Categories I, II, III, and IV have determined number of credits (9, 3, 3, 3 credits) respectively, equivalent to 18 credits, and Categories V and VI have 6 credits each.

Major Requirements **45 cr.**
IAF 211, IAF 231, IAF 301, IAF 321, IAF 322, IAF 401, IAF 402, IAF 407, IAF 409, IAF 490, PAD 201, POS 210, POS 350, POS 353, POS 382.

Electives in GIR **24 cr.**

Free Electives **6 cr.**

Minor in International Affairs and Diplomacy (18 credits)

Required: IAF 211, IAF 231, IAF 321.
Electives: 9 credits from IAF courses.

Undergraduate Courses: International Affairs and Diplomacy

IAF 211 Introduction to International Relations (3.0); 3 cr. An examination of the nature and evolution of the major concepts that shape international relations: the balance of power, the role of states in the international system, international law, and the elements of foreign policy. *Prerequisite:* ENL 105.

IAF 231 World Political Geography (3.0); 3 cr. A general survey of states in the world that focuses on politically relevant geographic information: location, size, population, principal cities, and major resources.

IAF 239 Elements of Globalization (3.0); 3 cr. This course analyzes the multitude of factors that have increasingly been leading to the phenomenon of globalization in the international system: political, economic, technological, communication, cultural, organizational, financial, legal, and structural/ political among others. The course focuses on case studies in the various dimensions of globalization worldwide, and on directed individual and group research.

IAF 301 Modern Political Ideologies (3.0); 3 cr. An introduction to the most influential political ideas in the modern world since the mid-19th century. The focus is on the ideologies that have been influential and effective in the international system. *Prerequisite:* ENL 105.

IAF 303 Feminism in International Relations (3.0); 3 cr. This course provides an overview of feminist political and international relations theory. It explores the questions surrounding the construction of gender, the complexity and multiplicity in the different positions in gender constructions, and how feminist agency and knowledge creation can exist in masculine-dominated spaces.

IAF 305 Gender, Security, and Human Rights (3.0); 3 cr. This course is at the juncture between international relations, peace studies, security studies, human rights and gender studies. The primary objective of this course is to review the theories on security, the feminist perspectives on security, and feminist theory of international politics. This course will cover gender-based violence in the context of public and private spaces and in periods of war and peace. Furthermore, the course will examine the role of both state and non-state actors in the perpetuation of violence against women during conflict. Finally, the course will review the role of the women's movement in the development of gender security agendas in the international system and human rights.

IAF 321 Diplomacy: Theory and Practice (3.0); 3 cr. An examination of the principles and practice of diplomacy, international relations, and an analysis of the structures, functions, and procedures of diplomatic and consular services, including diplomatic privileges, immunities, and recruitment of diplomatic and consular personnel. *Prerequisite:* IAF 211 or consent of instructor.

IAF 322 Lebanese Diplomacy (3.0); 3 cr. Covers the legal and practical evolution of the Lebanese diplomatic corps and focuses on the framework within which Lebanese diplomacy operates, the direction(s) which it generally takes regionally and internationally, and the approaches and strategies followed. (Arabic/English).

IAF 331 Geopolitics (3.0); 3 cr. The course provides an analysis of the reciprocal effects of geography and political organization on the geopolitical positions of states in the international system, including size and location demography, national resources, spatial strategies, and maritime power. Other topics include: theories of geopolitics, the impact of nationalism on geopolitics, political geography, and the interrelations among geopolitics and international relations. *Prerequisite:* IAF 231 or consent of instructor.

IAF 332 Introduction to Strategic Studies (3.0); 3 cr. This course introduces students to the field of strategy, the basic concepts and issues of strategy, deterrence, defense, and arms control, an overview of defense policies, programs, and problems. Students will learn how to relate International Relations and Political Science theory to Strategy. Furthermore, students will be able to understand how political military leaders develop policies during times of war and peace. Strategy is a byproduct of geopolitics. Currently, International Relations, as well as Political Science are both directly related to the field of Strategy.

IAF 333 Terrorism (3.0); 3 cr. This course studies terrorism in modern times, its definition, its history, its roots and its geographical spread. Other topics include: the political, religious, social, cultural, economic, and ideological causes of terrorism as well as international cooperation in the fight against terrorism. A number of case studies, including the September 11 terrorist attack and other examples selected from various countries supplement the course.

IAF 340 International Political Economy (3.0); 3 cr. Studies the contemporary issues in international political economy approaches, global welfare, international debts, equality, and ecology.

IAF 401 Public International Law (3.0); 3 cr. A study of the sources of Public International Law and its application in interstate relations.

IAF 402 Human Rights in International Politics (3.0); 3 cr. This course covers the conceptual bases of the fundamental rights of the human being. It focuses on international principles, conventions, and treaties signed by governments on the question of human rights at the international, regional, and national levels, and the ways and means through which violations of human rights may be documented and countered.

IAF 404 Laws of Disruption (3.0); 3 cr. Examination of the various natural, economic, scientific and technological factors which trouble the status quo of states thus pushing them to develop different political strategies to meet the changes in the world order. Topics include: global warming, advancement of technology and cyber space, nuclear development, and natural disasters.

IAF 407 International and Regional Organizations (3.0); 3 cr. An examination of the structures, functions, and agencies of the United Nations and other regional international organizations, and their role in the international system. *Prerequisite:* IAF 211 or consent of instructor.

IAF 409 Foreign Policy Making of the Major Powers (3.0); 3 cr. An analysis of the making and objectives of the foreign policy of the major states in the international system in the context of globalization, the new world order, European integration, and other regional factors. *Prerequisite:* IAF 211 or consent of instructor.

IAF 411 Conflict Management and Resolution (3.0); 3 cr. This course examines the causes of conflict, its management, and neutral resolution. It prepares the student to define the nature of conflict, understand its causes and ramifications, study ways to manage and limit its scope, and then search for solutions. *Prerequisite:* IAF 211 or consent of instructor.

IAF 453 Euro-Mediterranean Partnership (3.0); 3 cr. A study of the historical and evolving relationships between Europe and the Middle East, and the factors of trade, resources, security, and geo-strategic consideration which influence these relationships.

IAF 471 Modern Europe and the European Union (3.0); 3 cr. A study of the European Union and its economic, political, social, financial, and legal institutions. Attention is given to the impact of the

European integration process in Europe and beyond. *Prerequisite:* IAF 211 or consent of instructor.

IAF 488 Current Issues in International Affairs and Diplomacy (3.0); 3 cr. A seminar highlighting topic areas and theoretical approaches of particular interest to the study of international affairs and diplomacy as a profession. This course will deal with both critical thinking and practice in a specific area. The content and focus of the course will be altered from semester to semester in order to remain up to date with technical experience and scholarly discourse in the field.

IAF 490 Senior Study (3.0); 3 cr. Special topics in International Affairs and Diplomacy.

THE DEGREE OF MASTER OF ARTS IN INTERNATIONAL AFFAIRS AND DIPLOMACY

Mission

The mission of the MA in International Affairs and Diplomacy is to provide advanced university training in the broad academic field of international affairs and diplomacy, and to graduate highly specialized students and equip them with theoretical and practical training that will prepare them for a multitude of career options, locally, regionally, and internationally. The MA also aims to graduate researchers who are able to pursue doctoral studies.

Program Educational Objectives

The MA program in International Affairs and Diplomacy is designed to provide students with in-depth knowledge in international affairs and diplomacy, national foreign service, and contemporary political and economic issues. It offers a variety of courses in international relations, comparative government, international organizations, international law, and draws on some courses in economics and business.

Program Learning Outcomes

Candidates who successfully complete the MA in International Affairs and Diplomacy will:

- Be able to engage in in-depth analysis of international relations and the advanced IR theories that explain those relations and help analyze their directions and effects;
- Be able to demonstrate skills as specialists or researchers in careers of national or international domains;
- Demonstrate the ability to go on for advanced doctoral studies in wide areas of concentrations in international affairs or diplomacy; and
- Be able to pursue careers with a variety of international organizations.

Degree Requirements (36 credits)

Core Requirements **9 cr.**
IAF 601, PAD 604, POS 681.

Major-Related Electives **15 cr.**
Choose 5 courses from
IAF 602, IAF 604, IAF 605, IAF 609, IAF 615, IAF 621, IAF 631, IAF 632, IAF 633, IAF 641, IAF 645, POS 611.

Free Electives **6 cr.**
Choose any 2 courses from GIR.

Completion Options **6 cr.**
Option I: Thesis (IAF 699)
Option II: 2 Major-related courses and a comprehensive written and oral exam.

Graduate Courses: International Affairs and Diplomacy

IAF 601 International Relations; Theory and Practice (3.0); 3 cr. The seminar surveys major theories of international relations and evaluates their utility for understanding international politics. It emphasizes:

(1) The broad trends and theoretical frameworks, which shape relations among states, both at the international and regional levels;
(2) The implications of the power factors on the external and domestic policies of states; and
(3) The factors leading to international cooperation and confrontation and their implications.

IAF 602 Economics of International Politics (3.0); 3 cr. The course investigates the relationship between economic and political processes in the international system, and the institutions involved in conducting these processes. Major theoretical understandings of international political economy are examined along with specific issues in the field. These issues include: international trade, trade and developing nations, transnational corporations, multinational investment, and the World Trade Organization.

IAF 604 Human Rights in International Politics (3.0); 3 cr. This seminar focuses on the role played by the UN and other intergovernmental organizations in protecting, promoting, and advancing human rights. Special emphasis is placed on problems of human rights violations worldwide, on international conventions, and the role of human rights organizations internationally.

IAF 605 International Organizations and Specialized Agencies (3.0); 3 cr. This seminar focuses on the role played by the UN and other intergovernmental organizations in international affairs. Special emphasis is placed on the operations of the specialized agencies (i.e. IMF, World Bank), the determinants of their policies, and the impact of these policies internationally.

IAF 609 Ethnic Conflict and Conflict Resolution (3.0); 3 cr. The seminar focuses on the theories and methods of conflict resolution, the relevant literature in the field, and the importance of conflict resolution mechanisms and modalities in international politics. These theories and modalities are applied to various intra- and interstate conflicts in the international system, some of which are focused upon as case studies in the seminar.

IAF 611 Globalization (3.0); 3 cr. Analyzes the multitude of factors that have increasingly been leading to the phenomenon of globalization in the international system: political, economic, technological, communication, cultural, organizational, financial, legal, and structural/political. The seminar focuses on case studies in the various dimensions of globalization worldwide, and on directed individual and group research.

IAF 615 Statesmanship and Diplomacy (3.0); 3 cr. Deals with the role of leaders and diplomats in protecting and promoting countries' interests and in influencing international politics, and addresses the factors that may guide or constrain statesmen in conducting foreign policy.

IAF 617 Democracy and Democratization in the International System (3.0); 3 cr. Covers the recent trends towards democratization and the factors, which promote or hinder democracy internationally. The seminar covers the theories of democracy and their evolution since the late eighteenth century, the development and expansion of democracy in various parts of the world or the constraints limiting its spread in others, as well as the implications of these questions on peoples, states, and international relations.

IAF 619 Nationalism and the politics of identity (3.0); 3 cr. Studies the different and complex factors shaping identity and national formations of groups and states, and explores how issues of ethnic and national identities have shaped world politics, and how subnationalism, supranationalism, and/or internationalism are reshaping it. Covers recent research and literature in the field concerning questions of identity in the international system and their effects on national integration and/or disintegration.

IAF 621 Contemporary International Issues (3.0); 3 cr. Provides an overview of the contemporary issues in international affairs that have political, strategic, and socio-economic significance in interstate relations. These issues range from ideological conflicts to technology and politics, warfare and politics, violence and terrorism, and nuclear proliferation.

IAF 623 The European Integration: Its impact (3.0); 3 cr. Analysis of the institutional structures of the European Union. Emphasis is on the economic and political effects of the integration process on Europe and beyond.

IAF 631 U.S. Foreign Policy-Making (3.0); 3 cr. The seminar explores the United States' foreign policy-making from an institutional perspective. It focuses on Congress, the Presidency, and the relevant executive agencies. Attention is given to US policy toward the Middle East.

IAF 632 Diplomacy (3.0); 3 cr. The focus in this seminar is on the role of diplomacy in interstate relations and how diplomacy can facilitate interaction among governments and nations and help to achieve national goals. It emphasizes the basics of diplomatic negotiations and bargaining along with the etiquettes of diplomatic and political relations.

IAF 633 Comparative Foreign Policy (3.0); 3 cr. The focus in this course is on how foreign policy is made in the context of a state's declared objectives. A primary attention is directed to the foreign policy-making of the major states in the international system and the various processes used to accomplish political goals, ideologies, and national interest.

IAF 635 Terrorism in the international System (3.0); 3 cr. Generically defined as violence indiscriminately targeting civilians and civil communities and milieus at the national or international levels, terrorism, in recent decades, has become a concern of global scale. The seminar analyses the factors causing the spread of this phenomenon and the measures or policies applied, or that may be applied, to deal with such threats.

IAF 641 Public International Law (3.0); 3 cr. A graduate seminar that deals with the sources and development of international law, with a special attention given to current trends and problems. A critical evaluation of contemporary problems of world legal order is provided, covering issues related to global resources regimes, war, and social, economic, and trade laws.

IAF 645 Political Risk Analysis (3.0); 3 cr. This course aims at investigating current international events and highlighting their potential negative impacts in the political, economic, social, and business arenas. Students will be given case studies in the detection and analysis of risk indicators and their probable consequences.

IAF 649 International Energy and Environmental Issues (3.0); 3 cr. A study of energy questions globally from the perspectives of economic developmental needs, on the one hand, and environmental considerations and concerns on the other. The seminar surveys the evolution of energy usage internationally and assesses the use of different sources of energy over time, the efficiency of these various sources, and their effects on development, the environment, and human society.

IAF 660 Special Topics in International Affairs (3.0); 3 cr. The seminar deals with

current issues in international affairs that have political, strategic, or economic significance at the global or regional levels. The questions to be studied in this seminar are based on current international developments and are chosen according to the specialty of the professor directing the course.

IAF 665 Current Issues in Human Rights and Global Justice (3.0); 3 cr. The first part of this course focuses on the dramatic changes in the creation and enforcement of international human rights law that have taken place since World War II. Notwithstanding serious challenges from a variety of sources, no government in the world publicly dissents from the acceptance of support for human rights. Students will examine the existing international human rights regime and explore the impact of the UN charter, the Universal Declaration, and various multilateral and regional human rights treaties and regimes on the behavior of nations today. Using cases from the ME, Europe, US, and international courts, the course will the focus on ethical issues in human rights. Topics will include political repression, informed consent, and human rights. Law can be used to promote human rights.

IAF 699 Thesis; 6 cr. The thesis involves the application of research methods to a significant topic of current relevance to the spheres of international affairs and diplomacy. The project involves the incorporation of the student's hypotheses, methods of testing, test results, and conclusion in a sound, written report available to later researchers.

IAF

THE DEGREE OF MASTER OF ARTS IN INTERNATIONAL AFFAIRS AND DIPLOMACY - INTERNATIONAL LAW EMPHASIS

Program Educational Objectives

In an increasingly interactive world influenced by state and nonstate actors in which governments, peoples, and large varieties of organizations and multinational corporations interact on a daily basis through an enormity of contracts, regulations, laws, and procedures, it has become necessary that higher educational institutions stress in their academic curricula the importance of International Law. This concentration in International Law helps students understand the basic different legal systems applied in international relations and the role of International Law in International Affairs.

Learning Outcomes

Candidates who successfully complete the MA in International Affairs and Diplomacy - International Law Concentration will:

- Combine and apply advanced knowledge in international affairs with a specialization in international law that gives them added career value;
- Illustrate acquired knowledge that will be of special interest to IGOs, NGOs, international banks, and a whole range of MNCs operating on the international stage;
- Assemble effective skills in understanding international legal theories and policies and applying those theories and policies in professional practice; and
- Demonstrate an understanding of international technical legal terms, and write reports and research with the appropriate professional legal terminologies.

Degree Requirements (36 credits)

Core Requirements **9 cr.**
IAF 601, PAD 604, POS 681.

Major-related Electives: choose 5 courses **15 cr.**
Choose any 5 INL courses from those listed in the catalog.

Free Electives **6 cr.**
Choose any 2 courses from GIR.

Completion Options **6 cr.**
Option I: Thesis (INL 699)
Option II: 2 Major-related courses and a comprehensive written and oral exam.

Graduate Courses: International Law

INL 620 International and Comparative Patent Law (3.0); 3 cr. A study of patent reform issues including domestic patent reform legislation and ongoing harmonization treaty discussions under WIPO. Review of selected topics with comparative study from the viewpoint of Japan, the United States, and Europe.

INL 622 International Environmental Law (3.0); 3 cr. Studies of the treaty negotiation process, role of international institutions in developing and implementing environmental agreements, relationship between environmental law and international issues, and developing countries' perspectives on environmental law. Issues covered include: climate change, export of hazardous waste, deforestation and biodiversity, Antarctica, and environmental concerns in war, human rights, and development financing.

INL 624 International Business Transactions (3.0); 3 cr. US law and practice relating to characteristic forms of international transactions, including the transnational sale of goods (i.e. the law governing the documentary sale, various forms of letters of credit, commercial terms, and insurance), the export of technology through franchising, distributorship, and licensing contracts, and the export of capital through the establishment, operation, and withdrawal of foreign direct investment. The impact of relevant international organizations and/or emerging substantive international commercial law (i.e. the United Nations convention on Contracts for the International Sale of Goods). Specialized problems in the negotiation and structure of international transactions.

INL 626 International Trade Law (3.0); 3 cr. Study of domestic and international laws and institutions governing foreign trade. Legal aspects of US participation in the World Trade Organization, NAFTA, and other international forums, laws regulating customs and tariffs, most-favored nation treatment, subsidies, dumping, unfair trade practices, and disruptive imports under the escape clause. Specialized problems in regulating exports under the Export Administration Act, boycotts, corrupt practices, and restrictive business practices may be covered.

INL 628 International Litigation (3.0); 3 cr. Study of the history, forms, progress, problems, and future of interstate, third party dispute resolution. Examination of basic issues and principles of public international litigation and arbitration between governments and between a government and a private entity. Investigation of the guiding principles and essential elements of conducting litigation in the arena of public international law and with state parties through in-depth examination of leading cases before the International Court of Justice. Problems of mixed and interstate arbitration, both ad hoc and institutional.

INL 630 Immigration Law (3.0); 3 cr. Theory and application of the Immigration and Nationality Act and 8 Code of Federal Regulations. Examination of practice before the Executive Office of Immigration Review, Immigration and Naturalization Service, Department of State and Department of Labor. Removal, political asylum, adjustment of status, naturalization, and other issues. Focus on family-and employment-based immigration practice. Examination of the procedural aspects of obtaining lawful permanent resident status in the US through the family and/or employment preferences categories, as well as the process for obtaining non-immigrant admission.

INL 632 Refugee and Asylum Law Seminar (3.0); 3 cr. Selected topics from the areas of international law pertaining to the protection of refugees and domestic law of political asylum.

INL 634 International Banking (3.0); 3 cr. Study of the legal aspects of international banking and finance, including international laws and regulations concerning the structure and transactions of international banks and institutions. Topics include: the institutional, legal, and regulatory framework for international commercial banking and development finance, the emerging rules regarding international trade in financial services, international supervision of banking activities and regulation of banking transactions, contractual instruments for international financial transactions, and international debt and development crisis.

INL 638 International Law of Human Rights (3.0); 3 cr. An overview of international and regional human rights instruments and institutions, focusing on the manner in which the UN, Middle Eastern, European, Inter-American, African, and Asian human rights systems seek to protect individual and group rights. Examination of the problems these systems have encountered in discharging their mandate and exploration of ways to strengthen international and regional governmental and non-governmental efforts in the human rights field.

INL 642 Law of the Sea (3.0); 3 cr. International law related to the use of ocean space. Development of international law concerning internal waters, territorial sea, contiguous zone, high seas, continental shelf-fisheries, exclusive economic zone, maritime boundaries, marine environment, marine scientific research, deep seabed, and settlement of disputes. Current legal and policy issues associated with these areas.

INL 644 International Law of Territory (3.0); 3 cr. Basic principles of the international law of territory, including the definition of territory, the forms it may take, its relationship to states and other subjects of international law, how territory is acquired, how it is lost and how it is transferred, how it is delimited and demarcated, how the title to territory is affected by historical and demographic factors, and traditional and contemporary principles and mechanisms for resolution of territorial disputes. Consideration of the modification of these principles since World War II and their possible application to several intense post-Cold War territorial disputes.

INL 646 Law of War (3.0); 3 cr. Examines the origins of the law of war, the 1949 Geneva Conventions for the Protection of War Victims, the Geneva Protocols of 1977, the 1980 Geneva Conventional Weapons Convention, other treaties and customary international law relating to means and methods of warfare, the role of the International Committee of the Red Cross, war crimes and enforcement mechanisms, and current problems in the regulation of hostilities.

INL 648 International Criminal Law (3.0); 3 cr. Study of selected issues attending the application of criminal law across international boundaries. Topics may include war crimes, terrorism, narcotics trafficking, money laundering, business fraud, extradition, and the recognition of foreign penal judgments.

INL 650 International Arbitration (3.0); 3 cr. Survey of arbitration and related mechanisms of dispute resolution in the international legal system that arise out of commercial, financial, and governmental transactions. Analysis of the arbitration agreement, the process of arbitration, and the enforcement of arbitrate awards as well as the common principles governing the disposition of claims. Review of the various arbitrate tribunals and their rules.

INL 652 International Negotiations (3.0); 3 cr. The art and science of international negotiations from a practitioner's perspective, analysis of the roles of the legislative and executive branches, examination of the inter- and intra-agency processes, including pre-, during, and post-negotiation, impact of external influences, arms control negotiations, and practical exercises in negotiations.

INL 699 Thesis; 6 cr. The thesis involves the application of research methods to a significant Topic of current relevance to the spheres of international law.

POLITICAL SCIENCE

THE DEGREE OF BACHELOR OF ARTS IN POLITICAL SCIENCE

Mission
The mission of the BA in Political Science is to build the characteristics of high intellect, moral integrity, enlightened citizenship, human solidarity, and responsible leadership by providing a balance of practical, theoretical, and applied course work in the concerned areas of study to students.

Program Educational Objectives
The BA in Political Science is designed to provide students with a full awareness of the discipline of Political Science. The major program will equip students with knowledge of the structures, institutions, and processes that make up the practice of domestic, regional, and global politics. The core curriculum is developed to stimulate critical analysis and evaluation of the political conditions and cases examined. The Department equips the students with the necessary oral and written skills that will afford them a smooth and solid transition into the graduate studies as well as professional preparation in areas which include: the public sector, foreign service, international and regional organizations, multi-national corporations, banking institutions, media, and other enterprises.

Program Learning Outcomes
Students who successfully complete the BA in Political Science will be able to:

- Demonstrate critical mastery of the technical and formal material required for entry into the workforce;
- Demonstrate a strong command of the major political science theories and concepts;
- Critically analyze and respond to the social, political, and economic needs of the state;
- Critically discuss the current issues in the field of political science in written and oral form; and
- Write analytical research papers on political science topics.

Degree Requirements (105 credits)

Liberal Arts Curriculum	**30 cr.**

The LAC courses are divided into (6) categories:
Categories I, II, III, and IV have determined number of credits (9, 3, 3, 3 credits) respectively, equivalent to 18 credits, and Categories V and VI have 6 credits each.

Major Requirements IAF 211, IAF 301, IAF 401, IAF 407, IAF 409, PAD 201, PAD 241, PAD 302, POS 210, POS 345, POS 350, POS 353, POS 382, POS 442, POS 490.	**45 cr.**
Electives in GIR	**24 cr.**
Free Electives	**6 cr.**

Minor in Political Science (18 credits)

Required: POS 210, POS 350, IAF 211.
Electives: 9 credits from POS courses.

THE DEGREE OF BACHELOR OF ARTS IN POLITICAL SCIENCE - NGOs EMPHASIS

Program Educational Objectives
Non-governmental organizations (NGOs) play an important role in creating an open and viable democratic society. This rapidly expanding sector faces the challenges posed by the transition economy and society. We see training in NGO management and civil society as excellent for developing professional managers in this sector in both Lebanon and the Arab World. This program is designed to provide students with broad knowledge in the field of International and Civil Society Organizations in general, and NGOs in particular. Graduates will be prepared to work in several career areas, in independent international, regional and local organizations and those that operate under the umbrella of the United Nations and its various agencies.

Program Learning Outcomes
Students who successfully complete the program will be able to:

- Implement the conceptual knowledge on NGO management as a science and profession;
- Demonstrate the operational skills and fundamental practical and theoretical knowledge required by the NGO community;
- Demonstrate a deep understanding of the role of civil societies in creating an enabling environment for development and cooperation across civil society organizations government institutions, and multilateral and bilateral back-donors; and
- Establish networks with multinational corporations, and, among others, media enterprises in their work on development.

Liberal Arts Curriculum **30 cr.**

The LAC courses are divided into (6) categories:
Categories I, II, III, and IV have determined number of credits (9, 3, 3, 3 credits) respectively, equivalent to 18 credits, and Categories V and VI have 6 credits each.

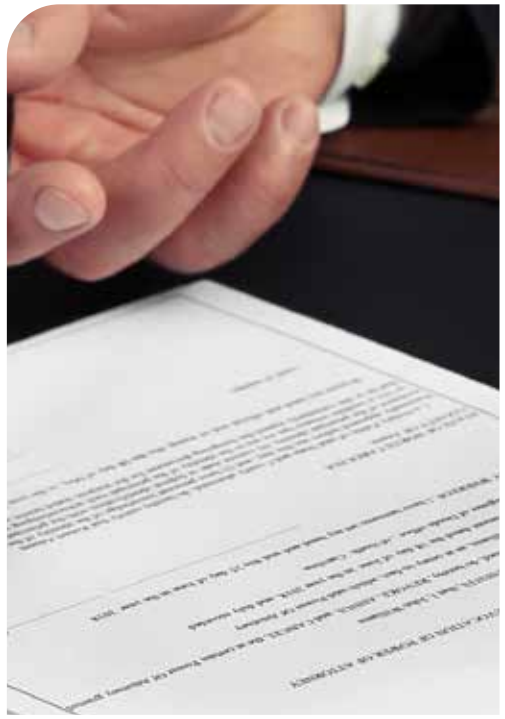
Major Requirements **48 cr.**
IAF 211, IAF 402, IAF 407, NGO 201, NGO 203, NGO 305, NGO 306, NGO 404, NGO 493, PAD 201, PAD 302, POS 213, POS 240, POS 350, POS 382, POS 442.

Electives in GIR **21 cr.**

Free Electives **6 cr.**

Minors in the Department of Government and International Relations

This program introduces students to the study of political systems in the Middle East, highlighting the Arab states of the region, but also focusing on Cyprus, Iran, Israel, and Turkey. Along with general required Political Science courses, students will take specialized courses on the dialogue of civilizations, human rights with an emphasis on the Middle East and NGOs in the region, and comparative public administration. The Government and Politics series of courses including the non-Arab countries will be tailored around the needs of students interested in working in the MENA region within an international and cross-cultural context. This program will equip students with the knowledge and skills needed to work with international and regional governmental organizations, international corporations, research, advocacy-based NGOs, and regional and international media outlets. It will also help them bridge the gap between the economies and political systems of Europe and the Middle East and take advantage of the expanding trade relationships within the greater Mediterranean market.



Minor in Middle Eastern Studies (18 credits)

The minor is of particular benefit to students in the following majors and fields of study:

- Primarily in Arabic Literature, Political Science, Public Administration, International Affairs and Diplomacy, Business Administration, Energy Economics, International Business Management, Education, Communication Arts, Advertising and Marketing, Graphic Design; and
- Peripherally in Sociology, Religion and Philosophy.

Core Minor Requirements **9 cr.**

POS 353	Governments of the Middle East
POS 405	Religion and Politics in the Middle East
POS 424	Political Economy of the Middle East

Minor Electives out of a pool of the following courses (9 credits)

IAF 453	Euro-Mediterranean Partnership
NGO 204	Civil Society in the MENA Region
NGO 306	NGOs and Development
POS 212	Political History of the Near East Until World War I
POS 304	Government and Politics of Israel
POS 308	Human Rights in the Middle East
POS 403	Arab-Israeli Conflict
POS 406	Cultural Pluralism in the Middle East
ARB 415	The Arabic Modernization Movement
ECN 439	Economics of Developing Countries

Minor in Peace and Conflict Studies (18 credits)

Academic and professional programs in Peace and Conflict Studies have grown in number considerably over the last decades. These programs are key in giving students the necessary skills and credentials to enroll in a Master's program in conflict resolution, work as crisis management experts, activists, mediators, etc., widen their horizons, become active members in peace and justice-related organizations, and contribute to the many existing peace and conflict journals. In addition to helping broaden the students' academic horizons and increase their employment opportunities, universities in Lebanon have the social responsibility to introduce them to the concepts of peace and justice and provide them with the skills to act on those principles. Lebanon remains a conflict zone with few grassroots initiatives aimed at managing its disputes. The absence of grassroots inventiveness is the consequence of a shortage in conflict resolution trainings and programs. The powerlessness of its youth in the face of conflict leads Lebanon to despair, and increases both the country's dependency on the ruling class and the rate at which young minds emigrate. NDU is committed to building a qualified peace taskforce and to take the lead in shaping Lebanon's future conflict resolvers.

The minor is a collaboration of multiple disciplines, enabling a comprehensive and original understanding with which to address the topics of peace and war.

The minor in Peace and Conflict Studies would be of particular benefit to students in the following majors and fields of study:

- Primarily in Education, Sociology, Economics, Politics, Psychology, Religion, Philosophy, and other social sciences.

Core Minor Requirements **9 cr.**

POS	315	Conflict Analysis and Intervention: a multitrack approach
POS	405	Religion and Politics in the Middle East
POS	425	Understanding and Creating Social Change

Minor Electives out of a pool of the following courses (9 credits)

IAF	402	Human Rights in International Politics
IAF	411	Conflict Management and Resolution
IAF	333	Terrorism
IAF	407	International and Regional Organizations
NGO	204	Civil Society in the MENA-Region
POS	319	Democracy and Human Rights
POS	337	Dialogue Among Civilizations
NGO	401	Civil Society and Advocacy
POS	240	Law and Society
POS	323	Minority Politics

Minor in Strategic Studies (18 credits)

Strategic studies deals with the attempts of sovereign states, and other international players (i.e. UN, EU, NATO, etc.), to deal with the contemporary issues challenging their political and economic interests. It enables students to combine their knowledge of politics with a review of the international environment in which it takes place. This interdisciplinary academic field of study is dedicated to the relationship between the political process, geography, the allocation of natural resources, economic development, and military power. The curriculum also includes the role of diplomacy and threats in the preparation and use of force. Specific topics include the emergence and resurgence of major regional powers such as China, India, and Russia, the changing role of the US as the world's remaining superpower, political Islam, and the military, economic, political developments in crisis regions in Africa, the Middle East, and Central and Southern Asia.

The minor in Strategic Studies at NDU allows students to broaden their knowledge comprehensively across multiple Faculties. Issues related to economics, politics, international relations, resources, and technology would thus gain different dimensions in the minds of the students, who would then be able to apply their knowledge to the world around them.

The minor in Strategic Studies would be of particular benefit to students in the following majors and fields of study:

- Primarily in Political Science, Public Administration, International Affairs and Diplomacy, Business Administration, Energy Economics, International Business Management, Advertising, Sociology and Marketing; and
- Peripherally in Natural Sciences, Psychology, and Economics.

Core Minor Requirements **9 cr.**

IAF	231	World Political Geography
IAF	331	Geopolitics
IAF	332	Introduction to Strategic Studies

Minor Electives out of the below pool (including at least one 400 level) (9 credits)

IAF	239	Elements of Globalization
IAF	211	Introduction to International Relations
IAF	333	Terrorism
IAF	404	Laws of Disruption
IAF	411	Conflict Managements and Resolution
IAF	340	International Political Economy
POS	323	Minority Politics
POS	403	Arab-Israeli Conflict

Minor in Gender Studies (18 Credits)

Gender Studies is a growing field of studies that cuts across most disciplines. Gender Studies analyses the social construction of the roles of females and males in society and its impact on individuals, communities, societies, states, and the international system. The importance and significance of having a focus on gender in international affairs, political science, education, sociology, nutrition, and medicine has been highlighted in most university institutions globally. The significance of integrating gender understanding and analysis in the Middle East is vital to understand contemporary events and their effects on development of citizenship, peace, and security. The NDU Handbook references gender in its identity statement, admission policy, and in various Faculty values statements. With this in mind, the FLPS has put together a minor in Gender Studies to explore the impact of gender on policy-making, global governance, and social engagement.

The Minor in Gender Studies is an interdisciplinary minor that would be of particular benefit to students in the following majors and fields of study:

- Primarily in Education, Sociology, Literature, Psychology, Political Science, International Affairs, Public Administration, Communication Arts; and
- Peripherally in Natural sciences, Religion, Philosophy, Advertising and Marketing, Business Management.

Core Minor Requirements **9 cr.**

POS	213	Introduction to Gender Studies
NGO	406	Gender & Development
IAF	303	Feminism in International Relations

Minor Electives out of the following pool of courses (9 credits)

IAF	305	Gender, Security, and Human Rights
POS	408	Gender and the Law
EDU	412	Gender and Human Interaction
LIR	424	Gender Studies
PSL	310	Psychology of the Family
SOL	313	Family Violence

Undergraduate Courses: NGOs

NGO 201 Introduction to NGOs and Civil Society (3.0); 3 cr. An introduction to NGOs and Civil Society Organizations, their scope, size, structure, and funding base. A special emphasis on their contribution to poverty alleviation/reduction, sustainable societies, and the progress of social welfare. *Prerequisite:* ENL 105.

NGO 202 Introduction to Development Theory (3.0); 3 cr. An introduction to key concepts and current paradigms related to development, poverty alleviation/reduction, international cooperation, and relief.

NGO 203 Introduction to NGO Management (3.0); 3 cr. An overview of the main areas related to NGO Management such as the context in which the Third Sector is operating, the organizational set-up of NGOs, the relations and programs, projects, and other related activities. The focus will be on development management. *Prerequisite:* ENL 105.

NGO 204 Civil Society in the MENA-Region (3.0); 3 cr. An analysis of the interaction and networking that take place between NGOs, the State and Non-formal Social Actors in the Middle East and North Africa region (MENA). A special focus on the typologies of CSOs active in the region and the examination of current data from the Arab World.

NGO 205 Legal Framework of NGOs (3.0); 3 cr. This course will study the laws applied to NGOs, the procedure of their legal registration, and restrictions in their activities, in Lebanon and other MENA countries, and will also compare these laws with the legal framework of NGOs in Western countries.

NGO 301 Introduction to Organization Development (3.0); 3 cr. An examination of current models for organizational assessment and change related to Civil Society Organizations and how different OD-interventions and tools can be applied within the Third Sector. Prerequisite: IAF 211 or consent of instructor.

NGO 304 Project Management for NGOs (3.0); 3 cr. An introduction to how NGOs prepare, design, fund, manage, implement, monitor, and report projects mainly in the development sector. Project-tools on Project Cycle Management (PCM) as well as the Logical Framework Approach (LFA) will be introduced.

NGO 305 Civil Society and Globalization (3.0); 3 cr. A study which enables the understanding, analysis, and interpretation of the key concepts of globalization and the related current external factors and challenges affecting Civil Societies and NGOs.

NGO 306 NGOs and Development (3.0); 3 cr. A study of the changing role of NGOs in the development process. A special emphasis on how the focus has changed from short-term relief and welfare to a more sustainable and community-based approach.

NGO 401 Civil Society and Advocacy (3.0); 3 cr. An introduction to main concepts, definitions and challenges to advocacy in the Third Sector. This course covers how NGOs are building up their advocacy strategies, what kind of tools that are being applied, and how the main stakeholders will be involved in the process.

NGO 402 Disaster Response and Humanitarian Assistance (3.0); 3 cr. An introduction to the Humanitarian Charter and Minimum Standards in Disaster Response. These standards cover areas in water supply, nutrition, food aid, shelter and site planning, and health services that have been adopted by all major agencies involved in Humanitarian Assistance.

NGO 403 Social Policy (3.0); 3 cr. An overview on how social policy is being

shaped and elaborated in Welfare States and countries with emerging Civil Societies in the MENA region. A special emphasis on networking between the State and NGOs on how to ensure basic social rights.

NGO 404 International Development Cooperation (3.0); 3 cr. An overview of the strategic framework involving Multilateral and Bilateral agencies, International and Local NGOs, and their partnerships, alliances, and relations in the MENA context. The course will also treat the current and past paradigms in Development Cooperation.

NGO 406 Gender and Development (3.0); 3 cr. This course will treat gender inequality and its correlation with poverty which results in acute failure of human capabilities. The women's empowerment deficit in the Arab World will be examined and analyzed through the Arab Human Development Reports as well as the strategies to overcome current obstacles.

NGO 410 Volunteer Management in NGOs (3.0); 3 cr. Volunteers are the heart of many NGOs and, like employees, need recruitment, reward, incentives, contracts, termination, and committees. This course will study the good practices and ethical issues around management of volunteers in NGOs and community work. *Prerequisite:* NGO 302.

NGO 490 Special Topics (3.0); 3 cr. Special topics in NGO Management.

NGO 493 (3.0); 3 cr. Internship in an NGO, UN agency, or social institution.

Undergraduate Courses: Political Science

POS 101 Principles of Politics and Government (3.0); 3 cr. Introduces the basic political philosophies and governmental processes, and the relationships between rights, liberties, and responsibilities of individuals and governments.

POS 201 Introduction to Political Science (3.0); 3 cr. Covers the basic concepts in political science. *Prerequisite:* ENL 105.

POS 209 Citizenship (3.0); 3cr. This course introduces students to the concept of citizenship and the relationship between the individual and the state. Participants learn to recognize the rights and duties of the individual, thus reinforcing their capacity for critical thinking and active engagement in public affairs.

POS 210 Government and Politics of Lebanon (3.0); 3 cr. An introduction to the various characteristics and factors that have shaped the Lebanese political system in the First and Second Republics. Special focus will be on democracy and national values, the political processes, and national institutions, mainly the Parliament, the Executive/Administrative Branch, and the Judicial System. Attention will be given to studying the national Construction along with the separation of powers and administrative centralization and decentralization policies.

POS 212 Political History of the Near East Until World War I (3.0); 3 cr. A survey of political history and culture of the Mediterranean civilizations.

POS 213 Introduction to Gender Studies (3.0); 3 cr. This course examines how gender plays a pervasive role in structuring social life. It emphasizes how the social constructs of ethnicity, class, gender, colonial legacy, and cultural identity intersect to legitimize the power and privilege of women and men internationally, with a special focus on the Middle East. Topics include: the debate between nature versus nurture and the intersections of race, class, gender, and social institutions such as family, education, work, and cultural hegemony.

POS 215 Religion and State (3.0); 3 cr. This course introduces the student to the relationship between religion and politics and the impact of religion on the major dimensions of politics in today's world. Religion as defined in the course refers to the social, ideological, and economic beliefs associated with various religious communities. This course will focus on the different religious views upon life in society, including economic and political issues and how these different and sometimes opposing views can lead to political strife.

POS 225 Politics of Catholic Social Theory (3.0); 3 cr. This course introduces students to the origins, application, and debate surrounding the social teachings and policies of the Catholic Church over the last 150 years. It deals with the basic texts and Papal Encyclicals, starting with Rerum Novarum in 1891, and other documents included in the Compendium of Social Doctrine as well as Catholic social movements throughout world, thus highlighting the Church's position on major issues related to politics, good governance, and social affairs. Topics include: peace, social justice, corporate social responsibility (CSR), environmental protection, and the role of the family in a globalized society.

POS 240 Law and Society (3.0); 3 cr. Nature, purposes, and sanctions of law sources of law private and public law. Common and civil law, courts, and administration of justice. This course is a prerequisite to all law courses. *Prerequisite:* ENL 105.

POS 304 Government and Politics of Israel (3.0); 3 cr. This course provides an overview of the political system of Israel, highlighting its ideological, economic, social

and cultural variables. It will introduce students to the historical, geopolitical, and ideological foundations of the Israeli state, the nature of its institutions, and their particular embeddedness in the Arab world, focusing on Lebanon and the Eastern Mediterranean in general.

POS 308 Human Rights in the Middle East (3.0); 3 cr. Survey of the fundamental political, social, and cultural rights of the human being in the MENA region. The course focuses on the principles, conventions, treaties, and laws ratified by governments on the international, regional, and national levels and the ways through which violations of human rights are documented and countered. Emphasis will be placed on the interplay between the human rights traditions of the West and those of the MENA region.

POS 315 Conflict Analysis and Intervention: a Multitrack Approach (3.0); 3 cr. Conflicts are complicated processes. Choosing an appropriate conflict intervention mechanism is largely dependent on the type of conflict under study. Learning the skills to analyze disputes is required to select the most accurate intervention mechanism.

POS 317 Political Parties, Public Opinion, Pressure Groups (3.0); 3 cr. Analysis of pressure politics and political behavior. Impact of parties and pressure groups on the governmental efficiency and the public good. Evaluation of public opinions impact on governmental decisions.

POS 319 Democracy and Human Rights (3.0); 3 cr. This primary aim of this course is to teach students to think critically about the political and cultural dimensions of democracy and human rights. The course focuses on different strategies of democracy and their relationship with human rights, the origins and maintenance of democracy in the modern world, and the process of democratization and its impact on state stability and on global protection of human rights.

POS 320 Media and Politics (3.0); 3 cr. A study of the ways in which the mass media influence politics and vice versa. The course explores the role that media play in providing information for citizens in the different political systems. Other topics include: the role of mass media in campaigns and elections, the ways in which media influence public opinion, how the media influence the political process, political attitudes, and behaviors.

POS 323 Minority Politics (3.0); 3 cr. An examination of the social, cultural, and economic factors which affect the political choices of minorities. Analysis of minorities' political rights and actions.

POS 331 Judicial Politics (3.0); 3 cr. Examination of the principal actors in the legal system: (i.e. police, lawyers, judges, and citizens). About half of the course is devoted to the study of judicial behavior in the courts and political and personal influences on judicial behavior.

POS 337 Dialogue Among Civilizations (3.0); 3 cr. This course introduces the concepts of tolerance and dialogue and demonstrates how they are the prerequisites for peaceful coexistence. It also emphasizes that terrorism represents the very embodiment of intolerance, thus raising awareness for the need for core values within the national and international communities. Moreover, makes students aware that in our globalizing and increasingly interconnected world, diverse cultures can provide a needed source of stability and continuity. The challenge is to balance this need against the risk of cultural stagnation. This course assumes that there is no simple solution. Students must always understand that cultures are living, evolving entities, not lifeless artifacts.

POS 345 Ethics and Leadership (3.0); 3 cr. An examination of the nature of the relation between authority and moral duty in light of the long tradition of civil and religious statutes.

POS 350 Comparative Governments and Politics (3.0); 3 cr. A study of the basic approaches to comparative politics. Constitutional comparisons among the political systems of the United States, Great Britain, France, China, and Japan are highlighted.

POS 353 Governments of the Middle East (3.0); 3 cr. A comparative study of the governmental systems and political processes of Middle Eastern countries.

POS 382 Empirical Research Methods (3.0); 3 cr. An exposition of the scientific methods for conducting research, collecting and analyzing data, formulating hypotheses and propositions, and developing well-organized reports. *Prerequisite:* ENL 213.

POS 403 Arab-Israeli Conflict (3.0); 3 cr. A study of the Arab-Israeli conflict and its effects on the legal, economic, and political patterns of the region and the international community.

POS 405 Religion and Politics in the Middle East (3.0); 3 cr. An exploration of the social, cultural, economic, and developmental roles of religion in the Middle East including the challenges, opportunities, and threats that Jewish, Christian, and Islamic faith-based political parties and movements are facing in the current context. Emphasis will be placed on the role of religion as a potential force for development, the role of faith-based civil society organizations and the political links to the Mediterranean region and the MENA as a whole.

POS 406 Cultural Pluralism in the Middle East (3.0); 3 cr. Survey of the development of Middle Eastern society focusing on the role of linguistic and confessional minorities, concepts of diversity, ethnic oppression, and inter-group relations explored within a comparative historical context. Emphasis will be placed on current theoretical discourse on hybridity, diversity, and the roles played by globalization, migration, and cyberspace in the region.

POS 408 Gender and the Law (3.0); 3 cr. This course explores the way activism around gender issues has developed into international policies and laws in an attempt to advance gender equality. The course takes a closer look at these implications of such and the political effects of international gender equality policies and laws. It surveys movement, legal and organizational strategies, and explores gender politics in currently salient issue areas ranging from violence and peacemaking to development and international economic restructuring. At the local context this course will cover the major issues concerning gender in Lebanese law.

POS 415 Diasporas: Conflict and Peacebuilding (3.0); 3 cr. This class introduces students to the impact of diasporas on international relations in the 21st century. Students will look at diasporas as communities whose impact needs to be understood in the host country, in the homeland, and on the actual diaspora community simultaneously. Because of the ability of migration studies to intersect with development studies, international security, and peacebuilding, this course will adopt an interdisciplinary approach to the study of diasporic interactions.

POS 424 Political Economy of the Middle East (3.0); 3 cr. Studies the major economies of the Middle East and the political administrative systems shaping these economies. The issues addressed include: the major economic centers in the Middle East, concentrations of wealth and poverty, redistributive justice, and the

international factors shaping Middle Eastern politics and economics. Emphasis will be placed on theories dealing with the role of the state in shaping economic development and the difficulties faced when implementing policy decisions.

POS 425 Understanding and Creating Social Change (3.0); 3 cr. This course identifies the causes and patterns of change and explores the origins and types of movements leading social change. Students will be exposed to change agents and change strategies and will learn how to develop a strategic advocacy plan. They will identify proponents and opponents of change and devise a tactic that ensures enough support for the transformation to be sustainable.

POS 442 Constitutional Law (3.0); 3 cr. A study of the precepts and provisions of the Lebanese constitution and its contributions to policy, governance, and democracy.

POS 479 Government and Politics of the United States (3.0); 3 cr. A study of the constitution of the American government and the determinants of the political process.

POS 482 Internship (3.0); 3 cr. A supervised on-the-job working experience in International Affairs, Public Administration, or Political Science, the internship will be done in cooperation with recognized international and national institutions in the private or public sector. Interns will have the opportunity to develop new skills by working under the direction and supervision of an experienced practitioner. A minimum of 120 hours of internship is required. A detailed report is to be submitted as a record of the work accomplished. Prerequisite: Senior Standing.

POS 488 Current Issues in Political Science (3.0); 3 cr. A seminar highlighting topic areas and theoretical approaches of particular interest to political science as a profession. This course will deal with both critical thinking and practice in a specific area. The content and focus of the course will be altered from semester to semester in order to remain up to date with technical experience and scholarly discourse in the field.

POS 490 Senior Study - Special Topics in Political Science (3.0); 3 cr.

THE DEGREE OF MASTER OF ARTS IN POLITICAL SCIENCE

The Department of Government and International Relations offers graduate work leading to the Master of Art in Political Science. This master's program is aimed at those students planning or embarking upon a career in public service and in related fields.

Mission

The mission of the MA in Political Science is to build on the attributes of refined intellect, moral integrity, enlightened citizenship, human solidarity, and responsible leadership to provide students with a theoretical and professional foundation for their careers. Rooted specifically in the Maronite Catholic traditions of NDU, graduates will be able to carry out independent and critical original research, work in applied fields such as government, civil society, the media, or private enterprise, and link their scholarly training to the improvement of conditions in society as a whole within a global context.

Program Educational Objectives

The Department of Political Science offers graduate work leading to the Master of Art in Political Science. This master's program is aimed at those students planning or embarking upon a career in public service and in related fields.

Program Learning Outcomes

Students who successfully complete the program will be able to:

- Carry out original research in the field of political science and present publishable papers on the topic;
- Analyze and critique the implementation of international research methods in the MENA region and develop adequate approaches compatible with their field of study; and
- Provide clear and concise analysis to prospective employers in need of expertise in the MENA region.

Degree Requirements (36 credits)

Core Requirements **9 cr.**
IAF 601, PAD 604, POS 681.

Major Electives **15 cr.**
IAF 604, IAF 605, IAF 615, IAF 633, IAF 641, IAF 645, PAD 618, PAD 627, PAD 652, PAD 654, POS 611, POS 619, POS 651.

Free Electives **6 cr.**

Completion Options **6 cr.**
Option I: Thesis (POS 699).
Option II: Major-related courses and comprehensive written and oral exam.

THE DEGREE OF MASTER OF ARTS IN POLITICAL SCIENCE - HUMAN RIGHTS EMPHASIS

Program Educational Objectives

The MA in Political Science - Human Rights Concentration is designed to build on development objectives to provide individuals from Lebanon and the region with the knowledge and tools necessary to become actors of change in their respective societies. Within this context of mainstreaming and networking HR, a master's degree in the field will greatly facilitate ongoing teaching, service, and research. This program will enable its graduates to not only interface with HR studies in the MENA region, but will also help establish a bridge to the latest international discourse and theories.

Program Learning Outcomes

Students who successfully complete the program will be able to:

- Demonstrate thorough knowledge of all international human rights conventions;
- Engage in critical analysis of the politics of human rights;
- Actively participate in developing a national action plan for human rights development in several areas; and
- Write proposals for funding and research development in any area related to human rights.

Degree Requirements (36 credits)

Core Requirements **9 cr.**
IAF 601, IAF 605, POS 681.

Major Electives **15 cr.**
IAF 604, IAF 609, IAF 617, IAF 641, IAF 665, INL 638, INL 646, NGO 605, POS 602, POS 608, POS 614, POS 615, POS 616, POS 632, POS 649, POS 658.

Electives **6 cr.**
POS 689 Internship in HR and another course related to the major
Or any two courses related to the major.

Thesis **6 cr.**
POS 698.

THE DEGREE OF MASTER OF ARTS IN POLITICAL SCIENCE - NGOs EMPHASIS

Program Educational Objectives
This program is designed to provide students with in-depth knowledge in the field of International and Civil Society Organizations and specifically NGOs and NPOs. The MA program is aimed at those students planning or embarking upon a career in independent international, regional, and local organizations, and those that operate under the umbrella of the United Nations and its various agencies, as well as other major development actors in the MENA region and beyond.

Program Learning Outcomes
Students who successfully complete the program will be able to:

- Build on previous experience and expertise in the field of law and demonstrate academic analytical skills with respect to legal practices in the MENA region;
- Carry out original research in the field of legal studies and present publishable papers on the topic;
- Demonstrate practical and professional skills needed for theoretical and applied research with respect to the legal system in the MENA region; and
- Coherently and convincingly critique international methods used to study legal processes in the MENA region and provide alternative research approaches.

Degree Requirements (36 credits)

Core Requirements **9 cr.**
IAF 601, PAD 604, POS 681.

Major Electives **15 cr.**
Choose any 5 NGO courses from those listed in the catalog.

Free Electives **6 cr.**
NGO 693 Internship in an NGO and another course related to the major
Or any two courses related to the major.

Thesis
POS 699.

Graduate Courses: NGOs

NGO 601 Development Theory and Practice. (3.0); 3 cr. This course deals with topics and issues related to the current development challenges in the MENA-region in the context of the global order. Case studies of NGOs that are active in different areas will be selected as well as different examples of sustainable projects and programs.

NGO 602 Changing Role of Civil Society Organizations in the MENA-region (3.0); 3 cr. The focus of this course is on the changing role of Civil Society Organizations in the MENA region based on existing and emerging NGO networks. The concept of Civil Society is being examined and challenged.

NGO 603 NGO Management (3.0); 3 cr. A comprehensive overview on issues like good governance and accountability, empowerment, partnership, measuring performance and results as well as the contexts in which NGOs are operating. Issues like advocacy and service delivery will be examined as well as the existing paradigms in development management.

NGO 604 Organization Development (3.0); 3 cr. This course will examine existing theoretical models around Organization Behavior in the Civil Society Sector. Organizational Assessment and Change, OD interventions, Organizational Culture, Leadership, and principles and practices for Organizational Learning are other main components of the course.

NGO 605 Civil Society, NGOs, Networking and Advocacy (3.0); 3 cr. An examination of how NGOs are networking and campaigning for human rights and core social issues with the State, the public opinion, the private sector, and decision-makers on different levels.

NGO 606 Civil Society, Welfare State and Social Policy (3.0); 3 cr. This course will critically analyze how social policy is being shaped and social services delivered by State, Private, and NGO actors in changing political and social contexts both globally and in the MENA region.

NGO 611 Advanced Course in Project Management for NGOs (3.0); 3 cr. A comprehensive view with case studies on how NGOs prepare, design, fund, manage, implement, monitor, and report projects mainly in the development sector.

NGO 613 Monitoring and Evaluation (3.0); 3 cr. A comprehensive overview how development projects are being monitored and evaluated by the main stakeholders. Other central topics include; quantitative and qualitative methods on how to collect, store, and analyze data and information as well as how do design the M/E process as an integral part of the project management system. *Prerequisite:* NGO 611.

NGO 615 Strategic Planning for NGOs (3.0); 3 cr. This course will treat how NGOs can become more proactive, efficient, focused, and committed in their service delivery. The focus will be to assess current strengths, weaknesses, opportunities, and threats and elaborate a strategic framework with the vision and mission statements, guiding values and principles and appropriate plans, programs, and projects.

NGO 621 Advanced course on Gender and Development (3.0); 3 cr. This course will examine and analyze gender inequality and its correlation with poverty which results in acute failure of human capabilities. The capability approach with its systematization and theorization, based on current case studies, is also a central part of the course.

NGO 623 Advanced Course on Religion and Development (3.0); 3 cr. This course will analyze the social and developmental roles of secular and religious NGOs in the Middle East and beyond. The focus will be on the praxis and the action carried out by Faith-Based organizations and Religious Charities.

NGO 626 Disaster Response and Emergency Preparedness (3.0); 3 cr. This course will study several cases of relief operations regarding man-made and humanitarian disasters utilizing the Humanitarian Charter and Minimum Standards in Disaster Response.

NGO 627 Corporate Social Responsibility in the MENA-Region (CSR) (3.0); 3 cr. This course will analyze current models of CSR and how the principles can be applied in the Arab World and beyond. Some real life examples will be studied. Related concepts on Corporate Accountability, Governance and Citizenship, as well as Social Responsibility and Ethical Investments, will be examined.

NGO 629 Fundraising Strategies and Proposal Writing for NGOs (3.0); 3 cr. This course will examine how NGOs can look for and approach potential donors and specifically how to prepare a written project proposal with all its components. *Prerequisite:* NGO 611.

NGO 690 Special Topics (3.0); 3 cr. Special topics in NGO Management.

NGO 693 (3.0); 3 cr. Internship in an NGO, UN agency or social institution.

NGO

Graduate Courses: Political Science

POS 601 Contemporary Political Theory (3.0); 3 cr. Analyzes the dominant and recent trends in political science theory, political philosophy, and Western political thought. It focuses on the major theories and theorists, Western and non-Western, whose writings have influenced the academic field and research institutions, and who have made their impact on the understanding and practice of politics.

POS 602 Introduction to Human Rights Standards (3.0); 3 cr. The primary aim of this course is to introduce students who have no knowledge of human rights to the basic concepts and principles of human rights and the theoretical debates that surround them. The course focuses on the origins and sources of human rights and how they developed throughout history to become internationally recognized standards. The course also introduces students to the importance and impact of human rights standards in domestic politics and international relations, in the maintenance of democracy and state stability in the modern world.

POS 603 Comparative Legislatures and Legislative Processes (3.0); 3 cr. Analyzes the structures, procedures, and norms governing the legislature: (i.e. making laws, elections, representation, and relations with other branches of government). It focuses on the functions and role of legislatures in general and covers legislatures of select major and non-major states in the international system and the characteristics which make them efficient and influential in the cases of some, or render them ineffective or marginal in the cases of others.

POS 605 Political Parties (3.0); 3 cr. Studies the structures, activities, and role of political parties in government and society. Emphasis is on the positive role of the party in developing the citizen, the political process, political stability of states, and the factors, which make parties effective and relevant. It distinguishes between two broad categories of parties: ideological parties and issue-oriented parties.

POS 607 Civil Liberties (3.0); 3 cr. Examines the development of constitutional law with regard to civil liberties and the protection of all citizens, including women and children, minorities, and ethnic, linguistic, and religious groups. The functions and roles of the courts to protect civil liberties represent one focus of the seminar, while the role of civic groups to promote them represents another. The course is supplemented by the study of case studies related to civil liberties issues.

POS 608 International Treaty Systems of Human Rights (3.0); 3 cr. The course explores the development of the international treaties covering different aspects of human rights through the United Nations, the European Union, and other regional organizations. It introduces the students to the bodies related to these treaties, their importance, functioning, and relevant mechanisms, giving students basic knowledge on how to make use of these bodies to help protect, promote, and implement basic human rights values.

POS 609 Security and Conflict Resolution (3.0); 3 cr. Reviews changing patterns of war and security since the early 20th century. Introduces students to a wide variety of literature and cases. A special focus is on methods, techniques and the management of conflicts. Different approaches are analyzed, namely management of conflicts bilaterally between states, multilaterally through international or regional organizations, and through the roles of the good offices of diplomats or personalities of international stature.

POS 611 The Middle East in International Politics (3.0); 3 cr. The seminar examines the place of the Middle

Eastern countries in the world system and the roles played by outside powers in the Middle East.

POS 613 Politics and the media (3.0); 3 cr. Role of the media in shaping local and international politics and in influencing agenda-setting nationally and internationally. Emphasis is on the role of the various media at the local, national, and inter-state settings, and on ethical conduct, professional norms, general organization, patterns of ownership, and the use of propaganda for various purposes.

POS 614 Civil and Political Rights (3.0); 3 cr. This seminar provides students with a detailed review of current civil and political rights. The review will cover the theoretical debates around the rights and practical challenges in their application in general, and Arab and Lebanese contexts in particular.

POS 615 Economic, Social and Cultural Rights (3.0); 3 cr. This seminar provides students with a detailed review of all the economic, social, and cultural rights. The review will cover the theoretical debates around the rights and practical challenges in their application in general, and Arab and Lebanese contexts in particular.

POS 616 Rights of Vulnerable Groups (3.0); 3 cr. This seminar explores the different treaties created to cover the rights of vulnerable groups including women, children, minorities, indigenous peoples, migrant workers, refugees, and the disabled. The seminar explores the reasons for which those treaties were added to the basic original general human rights treaties and the benefits their application can give to a society, notably their added value for the development processes of individual countries. *Prerequisite:* POS 608.

POS 619 Political Communication (3.0); 3 cr. Diffusion of persuasive political communications through standard and created media. Examination of campaign techniques (i.e. research on issues and themes, electorate polling, thematic media approaches, campaign strategies) in management and administration.

POS 632 Human Rights in the MENA Region (3.0); 3 cr. This seminar views human rights in a regional context and evaluates the history, the current situation, and the future prospects for human rights in the MENA region. It explores the structural problems and challenges that the advancement of human rights is facing and introduces successful experience and good practice that have achieved change and made a difference in their respective societies.

POS 649 Human Rights in Religious Thought (3.0); 3 cr. Due to the lately increased importance of religion in international politics and to its longstanding importance in societies, politics, and conflicts of the MENA region, this seminar provides a review of the different religions' positions and views on human rights. Added focus will be provided for the three monotheistic religions that are the main players and have the most influence in MENA politics. The seminar will also explore the possible conflicts between human rights and religious teachings and survey conciliatory approaches. *Prerequisite:* POS 602.

POS 651 Contemporary Middle East Governments and Political Processes (3.0); 3 cr. A comparative study of the governmental systems and political processes of the contemporary Middle Eastern countries and their role in world affairs. Topics include: elites and political systems, democratization vs. fundamentalization, internal and external conflicts, and their impact on nation-building, and constitutional law in the Arab states.

POS 658 Information Technology and Human Rights (3.0); 3 cr. Technological developments in the field of information and communication (ICT) have had a tremendous impact on the field of human rights. This course will emphasize the significance of these changes with respect to freedom of expression, access to information, and protection against undue intrusion in the private sphere. It will also highlight the impact of ICT on protection of cultural rights and innovations in the economic and social fields, including economic opportunities for marginalized groups and regions. *Prerequisite:* POS 602.

POS 681 Research Methods (3.0); 3 cr. The course introduces students to the scientific methods for conducting research, collecting data, analyzing these data, formulating hypotheses and propositions, and developing these propositions into coherent, well-organized reports.

POS 689 Internship in Human Rights (3.0); 3 cr. This course provides a supervised on-the-job working experience in human rights. The internship will be done in cooperation with recognized international and national institutions and organizations from the public and private sector. Interns will have the opportunity to develop new skills by working under the direction and supervision of an experienced practitioner. A minimum of 120 hours of internship is required. A detailed report is to be submitted as a record of the work accomplished.

POS 698 Thesis in Human Rights (6.0); 6 cr. The thesis involves the application of research methods to a significant topic of current relevance to the spheres of human rights. It requires the incorporation of the student's hypotheses, methods of testing, test results, and conclusion in a sound, rigorous, and scholarly report.

POS 699 Thesis in Political Science (6.0); 6 cr. The thesis involves the application of research methods to a significant topic of current relevance to the spheres of Political Science. It requires the incorporation of the student's hypotheses, methods of testing, test results, and conclusion in a sound report available to later researchers.

PUBLIC ADMINISTRATION

THE DEGREE OF BACHELOR OF ARTS IN PUBLIC ADMINISTRATION*

Program Educational Objectives
The BA in Public Administration aims to teach students the discipline of public administration. The program is designed to provide students an opportunity to gain an in-depth knowledge of the public sector, its organization, operations, structures, and processes of government. Students are given high-quality training in order to become more effective participants in a democratic society as managers, policy analysts, public policy makers, and responsible citizens. Students receive instruction in such subjects as public management, budget preparation, techniques, public policy, ethics, and sustainable development. Graduates in Public Administration are prepared for careers in government at the national and international levels, as well as employment in nonprofit organizations.

Program Educational Objectives
This program is designed to equip students with comprehensive awareness of the discipline of Public Administration. The major courses will provide students with in-depth knowledge of the field, and will afford them a smooth and solid transition into the graduate studies as well as professional training in the following areas: the public sector in various ministries of government, budgeting and the budget process, foreign service, international and regional organizations, multi-national corporations, banking institutions, and other enterprises.

Program Learning Outcomes
Students graduating with a BA in Public Administration will be able to:

- Demonstrate appropriate analytical and research skills in the study of public administration;
- Identify relevant legal and political actors in the public policy process and study their roles;
- Identify the ethical component of public policy;
- Communicate in written and oral form to convey their knowledge and skills; and
- Find employment and pursue careers in the Lebanese public sector and NGOs.

*Not offered at the present time

Degree Requirements (105 credits)

Liberal Arts Curriculum **30 cr.**

The LAC courses are divided into (6) categories:
Categories I, II, III, and IV have determined number of credits (9, 3, 3, 3 credits) respectively, equivalent to 18 credits, and Categories V and VI have 6 credits each.

Major Requirements **45 cr.**
IAF 401, PAD 201, PAD 241, PAD 302, PAD 312, PAD 332, PAD 421, PAD 422, PAD 461, PAD 462, PAD 490, POS 210, POS 345, POS 382, POS 442.

Electives in GIR **24 cr.**

Free Electives **6 cr.**

Minor in Public Administration **18 cr.**

Required
PAD 201, PAD 302, PAD 332.

Electives
9 credits from PAD courses.

Undergraduate Courses: Public Administration

PAD 201 Introduction to Public Administration (3.0); 3 cr. Role of the Administration in the Political process with an examination of the basic concepts of Bureaucracy. This course is a prerequisite to all PAD courses. *Prerequisite* or *Corequisite:* ENL 105.

PAD 241 Administrative Law (3.0); 3 cr. (Arabic/English) Studies law governing the organization, powers, and contracts procedures of the executive and administrative establishments. (Arabic/English).

PAD 302 Elements of Public Policy (3.0); 3 cr. Studies consumer protection, natural resources, and environmental protection in relation to science and technology.

PAD 312 Regulatory Politics (3.0); 3 cr. Studies the development and implementation of governmental policies regulating business activities, consumerism, and labor.

PAD 332 Administration Behavior and Organization Theory (3.0); 3 cr. Examines the consideration of theories seeking to explain administrative behavior, and evidence for and against those theories as applied to governments.

PAD 421 Fiscal and Budgetary Policy of Lebanon (3.0); 3 cr. A study of the budgetary process from a legal and economic perspective. Topics include: the public debt, taxation, and financial policy, among others.

PAD 422 Political Administration Development (3.0); 3 cr. Illustrates topics such as: politics of social changes, comparative urbanization, and political administrative development caused by various legal, social, religious, and political factors.

PAD 461 Comparative Public Administration (3.0); 3 cr. Comparative public administration and theory. Bureaucracies and their input on the political development process.

PAD 462 Public Management (3.0); 3 cr. Analysis of advanced public management techniques. Problems of implementing techniques. Case study and research.

PAD 490 Senior Study - Special Topics in Public Administration (3.0); 3 cr. Special topics in Public Administration.

THE DEGREE OF MASTER OF ARTS IN PUBLIC ADMINISTRATION

The Department of Government and International Relations offers graduate work leading to the Master of Arts in Public Administration.

Mission

The MA in Public Administration is committed to teaching students different theories and concepts of public administration, and to contribute to finding solutions to public sector challenges by providing practice-oriented and research-based training. Furthermore, the program will prepare future graduates for careers in the public sector and NGOs both locally and internationally.

Program Educational Objectives

The MA in Public Administration is designed to provide both advanced theoretical and advanced training for students interested in careers in governmental, non-profit, and international organizations. The major draws form a broad range of topics relevant to the public sector. Instruction includes: the roles, development, and principles of public administration, public policy formulation, implementation and evaluation, public management, the relations between public administrations and legislators, the budgetary process, administrative law, public sector personnel management, and professional ethics. This MA program in public administration makes it possible for graduates to realize advanced educational objectives and to achieve their ambitions to become future community leaders involved in public policy and public management.

Program Learning Outcomes

Students graduating with an MA in Public Administration will be able to:

- Demonstrate a good understanding of contemporary trends and issues in Public Administration;
- Apply research methods and techniques, both quantitative and qualitative;
- Evaluate the management and the financing process of the public sector;
- Analyze the process of developing, approving, implementing, and evaluating public policies; and
- Demonstrate their ability to judge and apply the ethical dimensions of the public service.

Degree Requirements (36 credits)

Core Requirements **9 cr.**
IAF 601, PAD 604, POS 681.

Major Electives **15 cr.**
IAF 641, IAF 645, INL 626, PAD 602, PAD 612, PAD 618, PAD 627, PAD 629, PAD 632, PAD 652, PAD 654, POS 619.

Free Electives **6 cr.**
Choose any 2 courses from GIR.

Completion Options **6 cr.**
Option I: Thesis 6 cr. (PAD 699).
Option II: Major-related courses and a comprehensive written and oral exam.

Graduate Courses: Public Administration

PAD 602 Theories of Organization and the Public Sector (3.0); 3 cr. Examination of theoretical frameworks for studying public and private bureaucracies, with emphasis on ideologies, values, behavioral patterns and concepts of organization.

PAD 604 Public Administration (3.0); 3 cr. Theory and practice of program evaluation and evaluative research. Exploration of scope and limitations of current practice in evaluation, considering economic, political, social, and administrative factors.

PAD 605 Privatization: Theory and Application (3.0); 3 cr. This course addresses privatization as one of the fastest expanding economic phenomena in market economies, particularly in the developing economies of the Third World. It studies the rationale and significance of privatization in different socio-economic sectors and the various theories on privatization, their applications, as well as the future of privatization. The course is supplemented with case studies on different forms of privatization.

PAD 612 Comparative Development and Administration (3.0); 3 cr. Analysis of bureaucratic structures and function in Lebanon; industrialized and less developed countries, primarily the national level.

PAD 613 Planning, Program Analysis and Evaluation (3.0); 3 cr. Covers the elements of public planning, analysis, and evaluation of public policies and strategies in the context of declared governmental and social policies as well as public needs and welfare. This course aims at studying models and programs for assessing and evaluating public policies in relation to the administrative, economic, and social performance of the public sector.

PAD 618 Public Budgeting (3.0); 3 cr. Theory and techniques of budgeting in governmental fiscal relations and the political processes that relate to decision-making within the governmental organization.

PAD 627 Political Development and Social Change (3.0); 3 cr. It examines social change in the light of the political structures governing a state. The focus is on various developmental models used to affect or explain social change and on the social environment that may either propel or constrain change.

PAD 629 Public Sector Labor Relations (3.0); 3 cr. Nature of labor relations processes and practices at all levels. Attention to the political variables that distinguish public sector from private sector labor relations.

PAD 632 Administrative Law (3.0); 3 cr. The law governing public administration. Attention to legal reasoning, liability, due process, informalism, and public access. The apparatus of administration.

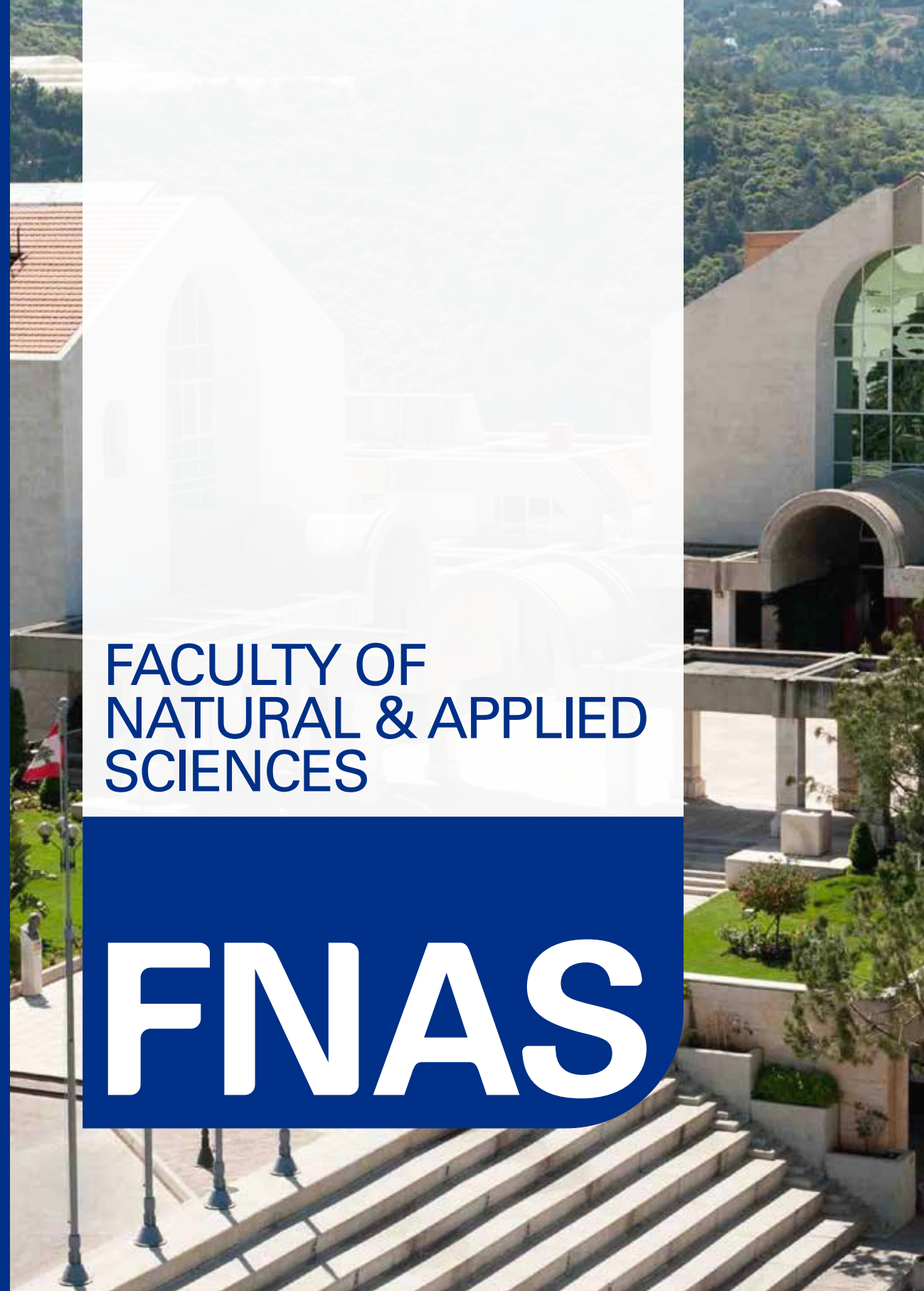
PAD 652 Organization Leadership (3.0); 3 cr. This course provides an in-depth examination of the leadership function within the work organization. Essential skills of effective leaders are diagnosed with respect to: goal setting, written and oral presentation, and behavioral flexibility. The behavioral dimension and impact of various skills are emphasized to explain the necessary leadership role of both technical and non-technical personnel in the work organization.

PAD 653 Comparative Public Policy (3.0); 3 cr. Comparative analysis of policy formation, process of social and economic policy decision making in selected industrial societies, and interactions of institutions, ideas, and power in decisions concerning social welfare, economic planning, and related policy areas.

PAD 654 Bureaucracy and Public Management (3.0); 3 cr. Familiarity with the Lebanese government. Nature of bureaucracy in modern government with emphasis on Lebanon. Explanation of why government agencies behave as they do. Focus on real and imagined problems with bureaucratic rule, and evaluation of commonly proposed solutions for these problems. Example from schools, armies, welfare bureaus, regulatory agencies and intelligence service among others.

PAD 699 Thesis or Project, in Public Administration (6.0); 6 cr. The thesis involves the application of research methods to a significant topic of current relevance to the spheres of Public Administration. The project involves the incorporation of the student's hypotheses, methods of testing, test results and conclusion in a sound, written report available to later researchers.

PAD



FACULTY OF NATURAL & APPLIED SCIENCES

FNAS

FACULTY DIRECTORY

FACULTY DIRECTORY

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FACULTY PROFILE

FACULTY OF NATURAL AND APPLIED SCIENCES

FACULTY PROFILE

The Faculty of Natural and Applied Sciences (FNAS) offers both undergraduate and graduate students a modern and comprehensive education in various fields of natural and applied sciences. This education aims to enhance their theoretical knowledge and technical skills while fostering a strong cultural identity, good citizenship, moral integrity, and a firm faith, all in alignment with the University's mission.

Our faculty consists primarily of Ph.D. holders who are actively involved in research, teaching, curriculum development, and academic administration. Our curricula are continuously updated to meet recognized academic standards and keep pace with the latest advancements in teaching methods and research.

Our science laboratories and computer center are equipped with state-of-the-art technology, regularly maintained and upgraded to ensure students have access to the best resources. Engaging in research is a fundamental aspect of our faculty members' work, evident in the consistent increase in their publications in reputable international journals.

HISTORICAL OVERVIEW

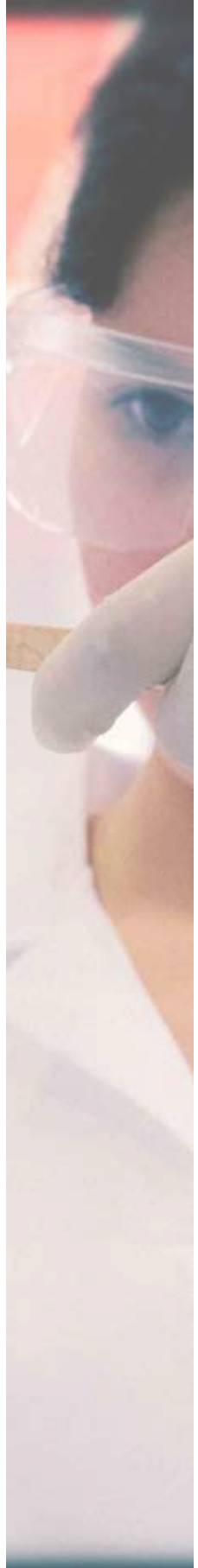
The FNAS has a rich history of academic development. It was established at the same time as NDU in the academic year 1987-1988, but it wasn't until 1991-1992 that our Faculty obtained legal recognition and began offering licensed diploma programs. Initially, we offered two majors: a BS in Computer Science and a BS in Mathematics, both officially licensed on 16/5/1991. These majors were affiliated with separate departments: the Department of Computer Science (DCS) and the Department of Mathematics (DM), respectively.

In 1993, we took the next step by obtaining licensing for two additional majors: a BS in Actuarial Science (03/06/1993) as part of the DM and a BS in Biology (25/11/1993). The Department of Sciences (DS) was established in 1995-1996 to house the biology major and the freshman science program, which began in October 1997. The Department of Mathematics was renamed the Department of Mathematics and Statistics (DMS) in 1995-1996 after incorporating all university statistics courses.

In 1997, we introduced a BS in Environmental Science (DS; 23/01/1997). In the fall semester of the academic year 2000-2001, we obtained five new majors consecutively: a BS in Physics (DS; 24/01/2000), and four majors licensed on the same date (24/03/2000): a BS in Applied Statistics (DMS), a BS in Geographic Information Systems (DCS), a BS in Business Computing (DCS), and a BS in Medical Lab Technology (DS).

In 2004, we added two new majors to the DS: a BS in Nutrition & Dietetics (01/10/2004) and a BS in Chemistry (15/04/2005).

In 1994, we took a significant step by introducing the first Master's program in the FNAS: the MS in Computer Science (DCS; 14/01/1994). In 2001, we obtained licensing for the second Master's program, the MS in Mathematics (DMS; 30/11/2001).



In Fall 2010, we transferred the BS degree in Physics and its related physics and astronomy courses from the DS to the newly created Department of Physics and Astrophysics. In the same semester, this department launched a joint master's degree in astrophysics in collaboration with Université Saint-Joseph de Beyrouth (USJ).

In Fall 2011, two additional Master's degrees were officially approved: the MS in Financial Mathematics (13/6/2011) and the MS in Biology (13/6/2011).

Additionally, with the establishment of the Faculty of Nursing and Health Sciences at NDU on October 1st, 2008 (officially licensed on 05/09/2008), both the BS in Nutrition & Dietetics and the BS in Medical Lab Technology were transferred to the new Faculty as of its starting date.

Since 2011, the FNAS has continued to grow and has introduced several undergraduate and graduate programs, including BS in Biochemistry, BS in Chemistry, BS in Computer Science-Information Technology, BS in Computer Science-Computer Graphics & Animation, and a Master of Science in Actuarial Sciences in partnership with Chedid Re, a renowned company recognized as one of the Top 20 Reinsurance Brokers in the world and an official Lloyds Broker.

MISSION, VISION AND VALUES

Mission
Consistent with the mission statement of Notre Dame University-Louaize (NDU), the Faculty of Natural and Applied Sciences (FNAS) meets the needs of undergraduate and graduate students in the scientific disciplines and to improve the scientific literacy of its students. The FNAS is committed to develop and disseminate scientific and technological knowledge through quality teaching, research, and outreach activities. The FNAS guides students to be ethical, innovative, life-long learners, and leaders in their professions and communities.

Vision
The Faculty will be a reputable locus of educational and intellectual excellence in the sciences: fostering creative learning systems, building a solid research tradition, sustaining an environment that supports the education of the whole person, and promoting a culture of joyful quest of the ultimate truth (Gaudium de Veritate) about Man and nature.

Values
The FNAS shares the following values that reflect its culture and priorities and are inspired by the University core values to which the whole NDU community subscribes:

- **Academic Excellence:** Whether in education or in research, the FNAS seeks academic excellence as a landmark of our curricula, believing in a fruitful connection between good research and creative classroom instruction;
- **Lifelong Learning:** The Faculty is committed to inculcate lifelong learning and the concept of continuous self-development;
- **Intellectual Freedom:** The FNAS respects the right of all to pursue knowledge freely, scholarly, ethically, and critically;
- **Integrity:** The Faculty believes in equity and honesty and aspires to incorporate these values in every aspect of our personal and academic lives;
- **Dialogue:** The FNAS encourages constant dialogue among officers, faculty, and students, and is under obligation to listen to the concerns and critiques of its students;
- **Accountability:** The Faculty accepts the responsibility of being accountable for its actions, and is dedicated to a transparent and efficient use of resources;
- **Service:** The FNAS values the virtue of service as a golden path toward becoming true leaders and as the fullest expression of its humanity;
- **Diversity:** The Faculty values the diversity of religious, ethnic, and cultural backgrounds among its students, faculty, and staff within the vision and framework set by the apostolic constitution Ex Corde Ecclesiae on Catholic universities (August 15, 1990); and
- **Faith:** The FNAS believes that faith in God, who manifested His love to the entire human race in Jesus Christ, shapes its profound commitment to serve the University and the community.

*Not offered at the present time

ACADEMIC DEPARTMENTS AND DEGREE PROGRAMS
The FNAS consists of the following Departments:

- Department of Computer Science
- Department of Mathematics and Statistics
- Department of Physics and Astronomy
- Department of Sciences

The Undergraduate Program
Each undergraduate program offered at the FNAS is composed of three components:

- Liberal Arts Curriculum (LAC)
- Core and Major Requirements
- Free Elective Requirements

Undergraduate Degrees
The **Department of Computer Science** offers undergraduate programs leading to the degrees of:

- BS in Business Computing (94 credits)*
- BS in Business Computing - Management Information Systems (94 credits)
- BS in Computer Science (94 credits)
- BS in Computer Science - Information Technology (94 credits)
- BS in Computer Science - Computer Graphic and Animation (94 credits)
- BS in Geographic Information Systems (91 credits)*

The **Department of Mathematics and Statistics** offers undergraduate programs leading to the degrees of:

- BS in Actuarial Sciences (94 credits)
- BS in Mathematics (90 credits)

The **Department of Physics and Astronomy** offers an undergraduate program leading to the degree of:

- BS in Physics (95 credits)

The **Department of Sciences** offers undergraduate programs leading to the degrees of:

- BS in Biology (92 credits)
- BS in Chemistry (92 credits)
- BS in Environmental Science (92 credits)
- BS in Biochemistry (92 credits)

The Department of Sciences also offers a **Freshman Science** program. This program leads to a certificate that is equivalent to the official Lebanese Baccalaureate Part II (Scientific Strands).

Minors
The FNAS offers six minors:

- Minor in Actuarial Sciences (18 credits) - Department of Mathematics & Statistics
- Minor in Mathematics (15 credits) - Department of Mathematics & Statistics
- Minor in Biology (17 credits) - Department of Sciences
- Minor in Physics (15 credits) - Department of Physics & Astronomy

*Not offered at the present time

- Minor in Geographic Information Systems (15 credits) - Department of Computer Science
- Minor in Environmental Science (16 credits) - Department of Sciences

Graduate Programs and Degrees

The FNAS offers graduate programs that lead to the degrees of:

- MS in Astrophysics (joint degree with USJ)*
- MS in Biology
- MS in Industrial Chemistry*
- MS in Computer Science
- MS in Financial Mathematics*
- MS in Mathematics
- MS in Actuarial Sciences

Self-Designed Interdisciplinary Minor Program

NDU aims to provide students with the programs they need for their future and offers them the opportunity to design their own Self-Designed Interdisciplinary Minor program. Students who would like to explore this option have to fill in the minor proposal with the collaboration of the concerned Faculty and Office of the Registrar. For guidelines, rules and regulations of the Self-Designed Interdisciplinary Minor, kindly refer to the Office of Registrar.

*Not offered at the present time

POLICIES AND PROCEDURES

Admission Requirements

For admission requirements to the degree of BS, refer to the Undergraduate Admission section of this *Catalog*.

Graduation Requirements

To earn the degree of BS from the FNAS, students must fulfill all requirements of the degree program, complete all required courses with a cumulative overall GPA of at least 2.0/4.0 and a minimum GPA of 2.0/4.0 in both the core and major requirements, and clear all accounts with the University. Candidates for degrees are reminded that grades of "I" assigned during the last semester to courses required for graduation will result in delaying their graduation.

FNAS Degree Programs at a Glance

Below table encapsulates, in alphabetical order, all programs of study offered by the FNAS along with the corresponding total number of credits required:

Programs of Study	Degrees, Minors & Certificates	Credits
Actuarial Sciences	BS	94
Actuarial Sciences	Minor	18
Actuarial Sciences	MS	30
Astrophysics*	MS	36
Biology	BS	92
Biology	Minor	17
Biology	MS	36
Biochemistry	BS	92
Business Computing*	BS	94
Business Computing (MIS)	BS	94
Chemistry	BS	92
Computer Science	BS	94
Computer Science	MS	30
Computer Science (IT)	BS	94
Computer Science (CGA)	BS	94
Environmental Science	BS	92
Environmental Science	Minor	16
Freshman Science	Certificate	Min. of 30
Financial Mathematics*	MS	33
Geographic Information Systems*	BS	91
Geographic Information Systems	Minor	15
Mathematics	BS	90
Mathematics	MS	33
Mathematics	Minor	15
Physics	BS	95
Physics	Minor	15

LIBERAL ARTS CURRICULUM (LAC)

The LAC is distributed as follows:

Category I. English and Arabic Communication **9 cr.**

A. English Communication **6 cr.**

ENL	213	Sophomore Rhetoric	3 cr.
And			
ENL	223	Communication Arts	3 cr.
Or			
ENL	230	English in the Workplace	3 cr.
Or			
ENL	231	Work Ready Now	3 cr.

B. Arabic Communication (one from the following pool) **3 cr.**

ARB	211	Appreciation of Arabic Literature
ARB	212	Advanced Arabic Grammar
ARB	224	Arabic Literature and Human Thought
ARB	231	Technical Arabic
ARB	306	The Modern Arabic Novel and Short Story
ARB	310	Arabic Theater

Category II. Religion **3 cr.**

REG	212	Religion and Social Issues
REG	213	Catholicism
REG	215	World Religions
REG	313	The Maronites: Faith and Cultural Heritage
REG	314	Marriage and Family in the Catholic Church

Category III. Ethics **3 cr.**

CSC	203	Information Age and Ethics (for students in the Department of Computer Science and the Department of Mathematics and Statistics)
ENS	205	Environment, Society and Ethics (for students in the Department of Sciences and the Department of Physics and Astronomy)

Category IV. Citizenship **3 cr.**

ENS	202	The Environment and Sustainable Development
FQM	200	Food Security and Sustainability
POS	201	Introduction to Political Science
POS	209	Citizenship
POS	210	Government and Politics of Lebanon
POS	240	Law and Society
POS	319	Democracy and Human Rights

Category V. Cultural Studies and Social Sciences **6 cr.**

A. Cultural Studies **3 cr.**

ARP	215	Cultural Themes in Lebanese Architecture
AVF	315	World Cinema Survey
COA	350	Current Issues
FAP	215	Art and Culture
HIT	211	History of Lebanon and the Middle East
HTM	201	Fundamentals of Hospitality and Cultural Tourism
HTM	326	Lebanon's Cultural, Heritage, and Nature Tourism
LIR	214	Introduction to Literary Genres
LIR	217	American Literature to the End of the 19th Century
LIR	305	Novel to the End of the 19th Century
MUS	210	Music Appreciation
NTR	215	Foods and Nutrition of World Cultures
PHL	211	Logic and the Scientific Method
PHL	232	Ancient World Philosophy
PHL	333	Medieval World Philosophy
PHL	334	Modern and Contemporary World Philosophy
POS	225	Politics of Catholic Social Theory
ROC	301	Romance Cultures

B. Social Science **3 cr.**

CSC	206	Games and Society
ECN	211	Principles of Microeconomics
ECN	212	Principles of Macroeconomics
ENG	210	Introduction to Engineering Economy
ENG	220	Engineering Innovation
MGT	201	Fundamentals of Management
MRK	201	Fundamentals of Marketing
PSL	201	Introduction to Psychology
SOL	201	Introduction to Sociology
SOL	313	Family Violence
SOL	316	Society and Women
SOL	322	Family: Sociological Perspectives
SOL	323	Society and Role of Global Intercultural Communication

Category VI. Applied and Life Sciences **6 cr.**

A. Applied Science **3 cr.**

CSC	201	Introduction to Computers
CSC	202	Computers for Visual Arts
CSC	207	Navigating the Age of Artificial Intelligence
ENG	250	Robotics and Society
GIS	211	Principles of Geographical Information Sciences
MAT	203	Everyday Math
MIS	201	Management Information Systems

B. Life and Natural Sciences **3 cr.**

AST	201	Discovering Astronomy
BIO	201	Your Body in Action
CHM	201	Chemistry in Everyday Life
ENS	201	Introduction to Environmental Science
ENS	203	Biodiversity
HEA	201	Health Awareness
HEA	204	Contemporary Health Issues
NTR	201	Basic Human Nutrition

FNAS-Dependent Exclusions

- All Programs (27 credits).

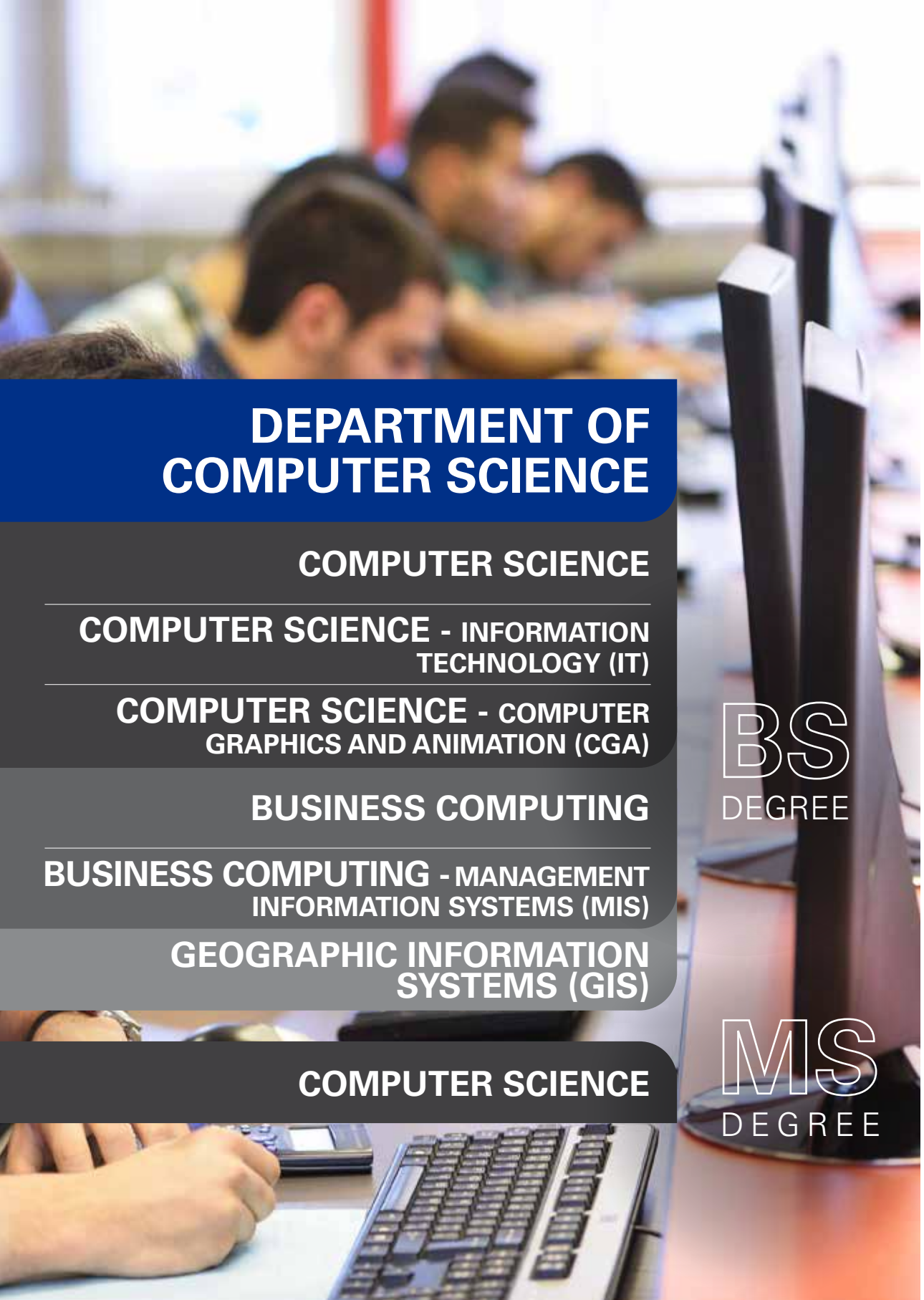
- **Category VI.B** (3 credits) excluded for DS (Department of Sciences) programs and **Category VI.A** (3 credits) excluded for all other programs (except for the BS in Computer Science).

- For the Computer Science Program, **Category VI.A** and **Category VI.B** are modified as below, while 3 credits will be taken only from **Category V.A** or **Category V. B.**

Category VI.A (3 cr.):
CSC 201 or CSC 202 or GIS 211 or MAT 203 or MIS 201

Category VI.B (3 cr.):
AST 201 or BIO 201 or CHM 201

- Furthermore, the course AST 201 cannot be taken by students majoring in Physics.



DEPARTMENT OF COMPUTER SCIENCE

COMPUTER SCIENCE

COMPUTER SCIENCE - INFORMATION TECHNOLOGY (IT)

COMPUTER SCIENCE - COMPUTER GRAPHICS AND ANIMATION (CGA)

BUSINESS COMPUTING

BUSINESS COMPUTING - MANAGEMENT INFORMATION SYSTEMS (MIS)

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

BS DEGREE

COMPUTER SCIENCE

MS DEGREE

BACHELOR DEGREE

DEPARTMENT OF COMPUTER SCIENCE

Professors:	Hawi, Nazir; Maalouf, Hoda;
Associate Professors:	Akiki, Pierre; Baroud, Fawzi; El Khaldi, Khaldoun; Khair, Marie; Samaha, Maya.
Assistant Professor:	Akiki, Paul; Obeid, Charbel.
Senior Lecturers:	Maroun, Bachir; Sawma, Victor; Thomas, Alexander.
Lecturer:	Miriam El Khoury Badran

Mission
The mission of the Department of Computer Science (DCS) is to offer high-quality education in the computing fields and an environment conducive to research for both students and faculty. Its programs provide graduate and undergraduate students with theoretical and applied knowledge and adopt a liberal arts education approach that promotes lifelong learning and ethical growth. The Department is dedicated to maintaining its current innovative programs and establishing new ones to uphold its status as an important national and regional center for discovering and applying new knowledge and technologies.

THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE

Mission
The mission of the Computer Science program is to educate students in the principles and practices of computer science, preparing them for life-long learning and careers in software design and development, computing systems technology, and research.

Program Educational Objectives
The graduates of the Computer Science program will:

- Have successful professional careers as leaders or members of teams involved in the design and development of computer and software systems;
- Apply scientific and engineering methodologies for analysis and resolution of problems, and pursue advanced study and conduct research in Computer Science and related disciplines;
- Have interpersonal skills needed for effective team-oriented problem solving as well as clear communication with technical and non-technical stakeholders; and
- Identify, analyze, and address legal, ethical, social, and security concerns associated with the computing field.

Learning Outcomes
Upon graduation, students will be able to:

- Analyze a complex computing problem, and apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing-practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.

Degree Requirements (94 credits)

Liberal Arts Curriculum (LAC)	**27 cr.**
Core Requirements CSC 212*, CSC 213*, CSC 219, CSC 313*, MAT 211, MAT 213, MAT 214, MAT 226.	**24 cr.**
Major Requirements CSC 311, CSC 312, CSC 316, CSC 323, CSC 325, CSC 413, CSC 414, CSC 423, CSC 425, CSC 426, CSC 432, CSC 480, CSC 490. Choose 1 course from the following list **: CSC 210, CSC 218, CSC 314, CSC 317, CSC 385, CSC 387, CSC 388, CSC 405, CSC 446, CSC 450, CSC 456, CSC 457, CSC 463, CSC 485, MAT 326, STA 210, MIS 434.	**40 cr.**
Free Electives	**3 cr.**

* The passing grade of CSC 212, CSC 213 and CSC 313 is "C- ".
** A CS student can petition for the Department's approval to take another CS or Math course as a technical elective

THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE - INFORMATION TECHNOLOGY (IT)

Mission
The mission of the Computer Science-Information Technology (CS-IT) program is to educate students in the principles and practices of Information Technology preparing them for lifetime of learning and careers in software and system design, development, integration, administration, and research.

Program Educational Objectives
The graduates of the CS-IT will:

- Lead successful professional careers as leaders or members of teams involved in the design, development, administration, and management of information technology systems;
- Pursue advanced study and conduct research in IT related disciplines;
- Have the interpersonal skills needed for effective team-oriented problem-solving
- Communicate clearly with technical and non-technical stakeholders; and
- Identify, analyze and address legal, ethical, social, and security concerns associated with the IT field.

Learning Outcomes
Upon graduation, students will be able to:

- Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions;
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline;
- Communicate effectively in variety of professional contexts;
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles;
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline;
- Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing-based systems.

Information Technology (IT)

Degree Requirements (94 credits)

Liberal Arts Curriculum (LAC) **27 cr.**

Core Requirements **18 cr.**
CSC 212, CSC 213, CSC 219, CSC 313, MAT 211, STA 210.

Major Requirements **46 cr.**
CSC 226, CSC 305, CSC 312, CSC 316, CSC 317, CSC 345, CSC 385, CSC 405, CSC 414, CSC 425, CSC 446, CSC 450, CSC 463, CSC 480, CSC 490.

Choose 1 course from the following list:
CSC 210, CSC 218, CSC 301, CSC 306, CSC 318, CSC 323, CSC 325, CSC 387, CSC 388, CSC 412, CSC 413, CSC 417, CSC 422, CSC 423, CSC 432, CSC 456, CSC 457, CSC 485, MAT 215, MIS 434.

Free Electives **3 cr.**

THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE - COMPUTER GRAPHICS AND ANIMATION (CGA)

Mission

The mission of the Computer Science (CGA) program is to educate students in the principles and practices of computer science preparing them for life-long learning and careers in software design and development, computing systems technology, and research.

Program Educational Objectives

- To prepare CGA graduates to use technical, conceptual, and critical abilities, effectively and appropriate technology tools;
- To prepare CGA graduates for successful professional careers in roles including but not limited to: modelers, animators, producers, and technical or art directors in all areas of animation and virtual environment production;
- To prepare CGA graduates with the basic principles of software engineering, the mathematical and computing concepts behind computer graphics, hardware concepts for computer graphics, creative visualization, modeling, and animation;
- To equip CGA graduates with the scientific and engineering methodologies for analysis and problem-solving; preparing them for advanced study and research in computer graphics and animation, and related disciplines;
- To prepare CGA graduates with the communication and interpersonal skills to function as effective members of collaborative multi-disciplinary teams in the production process; and
- To prepare CGA graduates to identify and analyze legal, ethical, and social concerns associated with the creative process.

Learning Outcomes

1. Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing and graphic requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities related to the program's discipline.
6. Demonstrate proficiency in specific theoretical, practical, and critical skills within computer graphics and animation.

Degree Requirements (94 Credits)

Liberal Arts Curriculum (LAC) **27 cr.**

Core Requirements **21 cr.**
CSC 202, CSC 212, CSC 213, CSC 313, MAT 211, MAT 214, FAP 211.

Major Requirements **43 cr.**
CSC 231, CSC 277, CSC 278, CSC 279, CSC 343, CSC 375, CSC 379, CSC 412, CSC 422, CSC 430, CSC 443, CSC 450, CSC 480, CSC 490.

Choose 1 course from the following list:
CSC 273, CSC 306, CSC 318, CSC 323, CSC 325, CSC 385, CSC 374, CSC 377, CSC 387, CSC 388, CSC 423, CSC 432, CSC 435, CSC 463, CSC 472, CSC 485.

Free Electives **3 cr.**

BUSINESS COMPUTING

THE DEGREE OF BACHELOR OF SCIENCE IN BUSINESS COMPUTING*

Mission

The mission of the Business Computing (BC) program is to educate students in the principles and practices of computing with focus on business knowledge and applications. The program prepares students for careers and graduate studies in Business or IT-related fields.

Program Educational Objectives

- To provide BC graduates with the knowledge and skills necessary to be effective professional contributors or leaders in the design, administration, and management of information technology systems and databases;
- To prepare BC graduates for professional careers in roles including but not limited to: project managers, systems analysts, applications developers, webmasters, database administration, and quality assurance;
- To provide BC graduates with the communication and interpersonal skills to become effective team-oriented problem-solvers as well as effective communicators with non-technical stakeholders;
- To provide BC graduates with the knowledge and skills to conduct advanced studies and research in software applications, information storage and retrieval, data mining, business administration, and management; and
- To prepare BC graduates to identify and analyze legal, ethical, and social concerns associated with the computing and business fields.

Learning Outcomes

Upon graduation, students will be able to:

- Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline
- Communicate effectively in a variety of professional contexts
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
- Support the delivery, use, and management of information systems within an information systems environment.

*Not offered at the present time

Degree Requirements (94 Credits)

Liberal Arts Curriculum (LAC) **27 cr.**

Core Requirements **24 cr.**
CSC 216, CSC 217, CSC 226, ACO 201, ECN 211, ECN 212, MAT 214, STA 210.

Major Requirements **40 cr.**
CSC 301, CSC 305, CSC 306, CSC 310, CSC 446, CSC 463, CSC 480, CSC 490, MIS 345, MIS 333, MIS 431, MIS 434.

Choose 2 courses from the following list
CSC 218, CSC 219, CSC 231, CSC 301, CSC 308, CSC 316, CSC 318, CSC 323, CSC 385, CSC 387, CSC 388, CSC 423, CSC 426, CSC 456, CSC 457, CSC 485, MIS 442.

Free Electives **3 cr.**

THE DEGREE OF BACHELOR OF SCIENCE IN BUSINESS COMPUTING - MANAGEMENT INFORMATION SYSTEMS (MIS)

Mission

The mission of the Management Information Systems (MIS) program is to educate students in the principles and practices of computing with focus on business knowledge and applications. The program prepares students for careers and graduate studies in Business or IT-related fields.

Program Educational Objectives

- To provide MIS graduates with the knowledge and skills necessary to be effective professional contributors or leaders in the design, administration, and management of computer-based information systems;
- To prepare MIS graduates for professional careers in roles including but not limited to: directors of information systems functions, project managers, systems analysts, and data management;
- To provide MIS graduates with the knowledge and skills to conduct advanced studies and research in disciplines for business administration, knowledge management, decision support systems, and related fields;
- To equip MIS graduates with the communication skills to function effectively in diverse groups and operate in an increasingly connected world; and
- To prepare MIS graduates to identify and analyze legal, ethical, and social concerns associated with the computing and business fields.

Learning Outcomes

Upon graduation, students will be able to:

1. Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Support the delivery, use, and management of information systems within an information systems environment.

Management Information Systems (MIS)

Degree Requirements (94 credits)

Liberal Arts Curriculum (LAC) **27 cr.**

Core Requirements **27 cr.**
ACO 201, MGT 201, MGT 425, MGT 429, MGT 455, CSC 210 or CSC 216, CSC 226, MRK 201, STA 210.

Major Requirements **37 cr.**
CSC 301, CSC 305, CSC 306, CSC 310, MIS 333, MIS 345, MIS 431, MIS 434, MIS 442, CSC 480, CSC 490.

Choose 2 courses from the following list:
CSC 217, CSC 308, CSC 316, CSC 318, CSC 385, CSC 387, CSC 388, CSC 405, CSC 417, CSC 425, CSC 446, CSC 456, CSC 457, CSC 485.

Free Electives **3 cr.**

Undergraduate Courses: Computer Science

CSC 100 Introduction to Practical Computing (3.0); 3 cr. This course is offered to students who want to enrich their knowledge and skills in Information Technology and Computing. It is designed so that students build problem-solving and critical-thinking skills related to Computer Science. It is intended to engage learners in the creative aspect through animation, web development, digital media, office, and programming. Through both its content and structure, the course aims to appeal a broad audience of students, whether expecting to major in computer science related tracks or to discovering the challenges and capabilities of this discipline.

CSC 201 Introduction to Computers (3.0); 3 cr. This course exposes students to a broad view of computer science by examining computer fundamentals, the system unit, input/output and storage, system and application software, the Internet and the WWW, networks, computer ethics, and security. In addition, the course aims to provide students with skills in managing data, word processing, electronic spreadsheets and presentations, web browsing, and e-learning.

CSC 202 Computers for Visual Arts (3.0); 3 cr. This course introduces the basic concepts of computer graphics and prepares students to the use of the state-of-the-art software packages for their projects. Students will experience working in groups, learn about project ethics and write formal reports for visual based projects. The technical part covers various perspectives of the visual artwork, such as 2D image manipulation, editing tools, 2D animation, compositing, and video editing.

CSC 203 Information Age and Ethics (3.0); 3 cr. This course introduces the theory and practice of computer ethics. It presents issues such as social networking, government surveillance, and intellectual property from different points of view. It allows students to understand how ethical theory can be applied to make ethical decisions concerning different computing issues.

CSC 204 Programming Logic (3.0); 3 cr. This is a language independent course that focuses on programming logic. Students learn to develop essential tools for problem solving, such as hierarchy charts, pseudocode, and flowcharts. It places special emphasis on concepts, such as visual, event-driven, and object-oriented programming. The course serves as a strong and thorough preparation for a sequence of up to date computer programming courses.

CSC 205 Adventures in Computational Thinking (3.0); 3 cr. The aim of this course is to introduce programming concepts in an appealing and fun way. Even though it places special emphasis on concepts, such as structured programming, algorithms, and recursion, students will learn to translate ideas into running programs using simple programming languages.

CSC 206 Games and Society (3.0); 3 cr. In this course, students study the positive and negative effects of video games on society, and the art and logic involved in the creation of the games. It includes research and discussions about games from a social perspective. The course also introduces some fundamentals of game design and exposure to building simple computer games.

CSC 207 Navigating the Age of Artificial Intelligence (3.0); 3 cr. Intended to the general student, this course provides a comprehensive overview of the field of Artificial Intelligence (AI). The primary goal is to equip students with the necessary fundamental knowledge, intellectual tools, and ethical foundations to successfully navigate the age of intelligent machines. The course starts by providing a general introduction to AI, then explores some of the subfields of AI and their current applications in various domains, and finally concludes by investigating the practical, social and ethical implications of AI.

CSC 210 Fundamentals of Computer Programming with Python (3.0); 3 cr. This course is an introduction to programming and algorithmic problem solving with Python. Topics include data types, variables, control structures (selection and iteration), input/output, lists, and the basic data structures. The course also offers an introduction to object-oriented programming and the software development process (design, implementation, testing, and documentation). *Prerequisite:* Sophomore Standing.

CSC 212 Program Design and Data Abstraction I (3.0); 3 cr. This course is an introduction to the fundamentals of computer programming and basic software design. Topics include: programming logic, design and implementation, problem decomposition, top-down problem solving. Program implementation is done using C++ structures, such as data types, input and output, calculations, selections, repetitions, functions, arrays, and pointers. Maintenance skills like program testing and debugging are also covered.

CSC 213 Program Design and Data Abstraction II (3.0); 3 cr. This course introduces software design and implementation from an object-oriented perspective using the C++ programming language. Topics include data abstraction, encapsulation, information hiding, software reusability, composition, inheritance, polymorphism, operator overloading, templates, exception handling and file processing. *Prerequisites:* CSC 212 or CSC 215.

CSC 215 Fundamentals of Programming (3; 0); 3 cr. This course is an introduction to the fundamentals of structured and object oriented programming concepts using the C++ programming language. Topics include: programming logic, software design and implementation, control structures, functions, recursion, arrays and vectors, pointers, strings, classes, composition, inheritance, templates, stream input/output, file and string stream processing.

CSC 216 Computer Programming I (3.0); 3 cr. This course is the first in a sequence of computer programming courses using Visual Basic. The purpose of this course is to introduce the fundamentals of programming in Visual Basic. NET including problem solving using computers, form and control properties, variables, assignment statements, arithmetic, control structures, arrays, functions, subs, and object-oriented, event-driven programming (OOED).

CSC 217 Computer Programming II (3.0); 3 cr. This course focuses on intermediate level topics in a programming language. Topics include arrays; simple I/O including text file I/O; object-oriented design; definition of classes including fields, methods, and constructors; subclasses, inheritance, and method overriding; privacy and visibility of class members; abstract base classes; using collection classes; and query language LINQ for eliciting and updating data from data stores such as arrays, collections, files, and databases. *Prerequisites:* CSC 216 or MIS 216.

CSC 218 Principles of Communication Systems (3.0); 3 cr. This course provides an introduction to data communications principles and computer networks. The course covers the fundamentals of signaling, basic transmission concepts, transmission media, analog and digital transmission, data encoding and modulation; Shannon channel capacity, in addition to the TCP/IP layering model.

CSC 219 Digital Computer Fundamentals (3.0); 3 cr. Fundamentals of logic design, the design of switching circuits using small and medium scale integrated devices are covered in this course. Flip flops, counters, decoders, multiplexes, and registers. *Prerequisite:* None.

CSC 222 Computer Organization and Assembly Language (3.0); 3 cr. This course covers machine-level architecture, functional units, memory, debugging, input/output structures, storage systems, instruction sets, machine cycle, assemblers, macroassemblers, and microprocessors.

CSC 226 Introduction to Database (3.0); 3 cr. This course introduces the fundamental concepts for designing, using, and implementing database systems. Students will appreciate the importance of databases, and why they are important resources that must be well managed and understood.

CSC 231 Multimedia Applications (3.0); 3 cr. This course provides an introduction to digital multimedia applications. It covers essential concepts in this area, and their application using multimedia production tools. The students mainly learn how to develop simple computer games and interactive media. *Prerequisites:* CSC 213 or CSC 215.

CSC 270 Computer Aided Engineering Design (0.2); 1 cr. This course is an introduction to computer aided drawing. Applications of existing CAD software to engineering problems.

CSC 273 Workshop in Computer Aided Architectural Design (3.0); 3 cr. This course aims at applying CAD concepts in developing architectural projects.

CSC 275 Fundamentals of Programming Laboratory (0.2); 1 cr. This course is a laboratory to accompany CSC 215. It provides exposure to problem-solving through programming in C++. Lab sessions are designed to give the student hands-on experience with concepts taught in CSC 215: Programming logic, software design and implementation, control structures, functions, recursion, arrays and vectors, pointers, strings, classes, composition, inheritance, templates, stream input/output, file and string stream processing.

CSC 277 Software Packages for Computer Graphics I (3.0); 3 cr. This course introduces 3D studio Max. Modeling tools, Shaders and Textures, Lighting, Rendering and Animation. *Prerequisite:* None.

CSC 278 Software Packages for Computer Graphics II (3.0); 3 cr. This course is an introduction to Graphics and Animation through the use of the Autodesk Maya package and through the discussion of the underlying concepts. Includes in-class, hands-on practice and lab time to develop beginning models and animations. Use of Autodesk Maya Workflow to make a first 3D animation. *Prerequisite:* None.

CSC 279 Software Packages for Computer Graphics III (3.0); 3 cr. This course is mostly training on 3rd party software or plugins for major applications in the market (Autodesk 3D studio max, Autodesk Maya, etc.). *Prerequisite:* CSC 277.

CSC 301 Management Information Systems (3.0); 3 cr. This course is an introduction to the fundamentals of information technologies and to the strategic opportunities and challenges presented by these technologies. The topics covered in this course are related to data management such as databases, data warehousing, data analysis, and data mining. In addition, modern information systems infrastructure is introduced mainly related to telecommunication networks and technology, cloud, and information systems security.

CSC 305 System Analysis and Design (3.0); 3 cr. This course is intended to provide a comprehensive coverage of traditional structured analysis, object-oriented concepts, and agile methods approach of systems analysis and design. Design techniques (Process Modeling, Data Modeling, and Object Oriented Modeling) will be introduced in addition to Project Management techniques. *Prerequisites:* CSC 226 or its equivalence.

CSC 306 Web Design (3.0); 3 cr. This course covers web design basics at the user interface level. The course takes the students through a stage-by-stage design of specific sites, ranging from personal sites to creating and managing a corporate intranet. Topics include HTML, CSS, JavaScript, JQuery, Bootstrap, UI/UX, Browser Compatibility, Search Engine Optimization, and Social Media Optimization. *Prerequisites:* CSC 210 or, CSC 212 or CSC 215 or CSC 216.

CSC 308 Data Science Foundations (3.0); 3 cr. This course is an introduction to the field of data science and the workflow of a data scientist: it provides student with basic skills and tools in acquiring, parsing, manipulating, and preparing data for statistical analysis. Topics include: data acquisition, cleaning, and management; graphical, descriptive, and inferential statistical methods; resampling, randomization, and simulation. *Prerequisites:* CSC 210 or CSC 212 or CSC 215 or CSC 216.

CSC 310 Data Visualization (3.0); 3 cr. This course exposes the students to the world of data visualization: it provides students with an understanding of how visual representations can help in the analysis and understanding of complex data. Students will learn how to design effective visualizations, and how to create their own interactive visualizations using modern tools and frameworks. *Prerequisites:* CSC 210 or CSC 212 or CSC 215 or CSC 216.

CSC 311 Theory of Computation (3.0); 3 cr. This course explores the limits of computation through the use of different models of computation: finite automata, pushdown automata and Turing machine. Undecidability is explained and the set of undecidable problems is explored using reductions. The related topics of regular expressions, closure properties, pumping lemma, and context-free grammars are covered. An introduction to computational complexity is also given. *Prerequisites:* CSC 313, MAT 211.

CSC 312 Computer Architecture (3.0); 3 cr. This course is concerned with the structure and behavior of the various functional modules of a digital computer and the reasoning behind their interaction to provide the processing needs of the user. It covers general feature of MIPS instruction set, Arithmetic floating point operations, performance evaluation using Amdahl's law, pipelining, data and branch hazards, and memory. It also introduces parallel computing architecture in a cloud environment and graphic processing unit (GPU) architecture. *Prerequisites:* CSC 219 or EEN 220.

CSC 313 Data Structures (3.0); 3 cr. This course is a detailed coverage of standard data structures with an emphasis on complexity analysis. Topics include: Asymptotic analysis, linked lists, stacks, queues, trees and balanced trees, hashing, priority queues and heaps, sorting. Standard graph algorithms such as DFS, BFS, shortest paths and minimum spanning trees are also covered. *Prerequisites:* CSC 213 or CSC 215.

CSC 314 Programming Languages (3.0); 3 cr. This course is based on a comparative study of programming languages: syntax, semanticist, and implementation. Students will also have to learn and gain working familiarity with the ANSI Standard C programming language. *Prerequisite:* CSC 212.

CSC 316 Fundamentals of Computer Security (3.0); 3 cr. This course covers the main concepts of computer security specially, the ones concerned with the latest technology. Encryption (symmetric & asymmetric), and the most important protocols using encryption are introduced. Also, program security, operating system security, database security, network security, mobile security and web security are introduced. *Prerequisites:* CSC 213, CSC 215 or CSC 217 or Junior Standing or Department Approval.

CSC 317 Information Assurance and Security (3.0); 3 cr. This course introduces fundamental concepts of information assurance. The covered topics focus on risk analysis and include: evaluating existing threats in information systems and determining their counter-measures, planning for security, and implementing security measures. *Prerequisites:* CSC 213, CSC 215 or CSC 217.

CSC 318 Geographic Information Systems (3.0); 3 cr. The objective of this course is to introduce students to Geographic Information System as a system and a science, and to its related sciences and technologies. It is also considered an entry course for students pursuing a minor and major degree in GIS. *Prerequisite:* None.

CSC 323 Object Oriented Design (3.0); 3 cr. This course emphasizes the object-oriented paradigm. It covers programming, modeling, and design concepts, which are essential for producing high-quality software. The students learn how to devise simple object-oriented software applications, for solving real-world problems. *Prerequisites:* CSC 213, CSC 215 or CSC 217.

CSC 325 Analysis of Algorithms (3.0); 3 cr. This course is about the design and analysis of algorithms. The student learns some basic mathematical tools that allow him to give an estimate of the running time of an algorithm without actually implementing it. We mainly describe three programming strategies that help us solve a problem more efficiently: greedy, divide-and-conquer, and dynamic programming. Several important problems that are interesting from a practical and theoretical point of views will be analyzed, including some of the very well-known NP-complete problems. *Prerequisite:* CSC 313.

CSC 343 Character Animation (3.0); 3 cr. The main purpose of Character Animation is to acquaint students with basic modeling and Animation of a 3d Character. The course will cover modeling, Texturing, Rigging and Animation of a 3d Character. *Prerequisites:* CSC 277 or CSC 278.

CSC 345 Fundamentals of Computer Network Management (3.0); 3 cr. This course covers basic network management concepts and methods with an emphasis on the Simple Network Management Protocol (SNMP) standard. The course also explains the TCP/IP layering model and how to analyze real-time network traffic using a visual tool. *Prerequisite:* Junior Standing.

CSC 371 Workshop in Advanced Programming (0.2); 1 cr. This course focused on language laboratory with projects requiring the proper choice of data structures, control structures, and tools of software based on solid theoretical computing concepts. Laboratory 2 hours per week, tutorial 1 hour per week.

CSC 372 Mathematical Software Packages (0.2); 1 cr. This course is an introduction to computer programming using MATLAB. Topics Include: arithmetic operations, data types, input and output, array operations, solving linear systems of equations, script files, 2D and 3D plots, and programming concepts, such as selection, repetition and functions. *Prerequisite:* Sophomore Standing.

CSC 374 3D Simulation Packages (3.0); 3 cr. The main purpose of this course is to introduce students to leading simulation packages and their integration into 3D packages. In particular students will learn to use fluid dynamics engines designed for simulation and rendering of realistic fire, smoke, explosion and other gaseous phenomena. *Prerequisite:* CSC 277.

CSC 375 Computer Modeling and Simulation (3.0); 3 cr. This course concentrates on the motion of animated objects. It covers the creation of mathematical models that represent an object's motion, and their application for simulating movement by using computing programming. The students learn essential techniques for producing 3D models, and using them in simulation tools. *Prerequisites:* CSC 213 and CSC 231.

CSC 376 Applied Security lab (0.2); 1 cr. This course applies the theoretical concepts of encryption by building or using some security packages. It studies and compares different security features of the current commercial anti-virus and anti-intrusion software, operating systems, database management systems, firewalls, and risk analysis packages. *Prerequisite:* CSC 316.

CSC 377 Fundamentals of 3D Sculpting and Simulation (3.0); 3 cr. This course introduces the basic concepts of creating realistic clothing for 3D characters (Game development, Animation) and understanding the basic interface and knowledge of garment pattern creation in Marvelous designer while also learning about 3D sculpting in Zbrush to create 3D characters and 3D sculpting assets for the animation or game development industry.

CSC 379 Fundamentals of 3D Compositing (3.0); 3 cr. This course introduces the basic concepts of digital compositing and prepares students to the use of the state-of-the-art software packages for their projects. It covers various topics, such as tracking, color correction, keying, node-based compositing, camera tracking, and 2D-3D integration. *Prerequisites:* CSC 202 or CSC 279.

CSC 385 Internet Computing (3.0); 3 cr. The topics covered in the course include Introduction to Internet programming at the backend. This includes HTML, MySQL, Apache, PHP, Object Oriented PHP, and modern MVC frameworks. *Prerequisites:* CSC 213, CSC 215 or CSC 217.

CSC 387 Advanced programming using Java (3.0); 3 cr. This course includes C++ to Java, interfaces, inner classes, and I/O system. It involves creating Windows & Applets, Multiple Threads, Java Database Connectivity (JDBC), Java Networking: Client/Server Architecture, Servlet, and Java Server Page (JSP). *Prerequisites:* CSC 213 or CSC 215.

CSC 388 Mobile Application Development (3.0); 3 cr. This course explores mobile application development using current mobile development languages. It gives an overview of the various frontend (client-side) methods to develop a mobile application. It also includes the necessary backend (server-side) development to achieve a minimal communication needed for an application to connect to a remote server in order to send and receive data. *Prerequisites:* CSC 213, CSC 215 or CSC 217.

CSC 405 Systems integration (3.0); 3 cr. This course covers the process of integrating different systems and software applications. The students learn about planning, developing, implementing, and managing the integration of enterprise systems. The covered topics include: Service Oriented Architecture, management practices for integration projects, and acceptance testing. *Prerequisites:* CSC 213, CSC 215 or CSC 305.

CSC 412 Introduction to Computer Graphics (3.0); 3 cr. This course covers video basics, raster scan graphics, Bresenham algorithm, viewports, geometric forms and models, polygon filling and antialiasing, halftoning, convex boundaries, interior and exterior clipping, hidden lines and hidden surfaces. *Prerequisites:* CSC 213, CSC 215 or CSC 320.

CSC 413 Parallel and Distributed Computing (3.0); 3 cr. This course provides an introduction to parallel and distributed computing. Topics covered include: high performance computing on shared memory and distributed platforms, general purpose computing on GPUs, message passing, indirect communication, mapreduce,

distributed platforms, partitioning and load balancing, consistency, availability, partition tolerance, performance metrics and trade-offs. *Prerequisite:* CSC 323.

CSC 414 Applied Operating Systems (3.0); 3 cr. This course introduces the fundamental concepts in modern operating systems, such as processes and threads, scheduling, concurrency, memory management, file systems, access control. Contemporary operating systems are used to illustrate these concepts. *Prerequisites:* CSC 312 or EEN 323.

CSC 415 Introduction to Operating Systems (3.0); 3 cr. Topics in this course include operating system concepts; system calls; interprocess communication; race condition; mutual exclusion with/without busy waiting; semaphores; monitors; the problem deadlock; process scheduling; memory management, file systems; security; I/O. *Prerequisites:* CSC 312 or EEN 323.

CSC 417 Advanced Programming Technologies (3.0); 3 cr. This course guides students to use top-notch programming technologies to develop applications that: process data in text, binary and XML files and encrypt them; consume ADO.NET objects with databases in MS Access, MS Server or Oracle; consume ASP.NET objects to build web applications; and use mobile objects to develop mobile applications. *Prerequisites:* CSC 213, CSC 215 or CSC 217.

CSC 422 Introduction to Image Processing (3.0); 3 cr. This course introduces the basic theories and technologies of digital image processing. Topics include discrete representation of images, intensity transformations for image enhancement, spatial domain linear filtering, two dimensional discrete Fourier transform and frequency domain filtering, nonlinear image filtering, edge detection, image segmentation, and image compression. *Prerequisites:* CSC 213, CSC 215 or CSC 220.

CSC 423 Software Engineering (3.0); 3 cr. This course provides an overview of software engineering. A number of topics are explored to demonstrate different stages of the software development lifecycle. The students learn to appreciate the importance of applying a systematic, disciplined, and quantifiable approach to all aspects of software production. *Prerequisites:* CSC 213, CSC 215 or CSC 217.

CSC 425 Data Communications and Computer Networks (3.0); 3 cr. This course gives the student the necessary background to understand existing communication systems and enable him or her the design and the analysis of computer networks. Covered topics are: LANs, wireless technologies, packet switching, routing technologies, ISO reference model, Internet Protocols (IP, ARP/RARP, DHCP, ICMP, IGMP, TCP, UDP), throughput and delay calculation. *Prerequisites:* CSC 218 or CSC 312 or MIS 345 or EEN 323 or CSC 345.

CSC 426 Principles of Database Systems (3.0); 3 cr. This course covers fundamental concepts related to database design and implementation. The students learn how to produce database design models, and then develop them into a working database by using a database management system. They also learn how to implement queries for working with a database's data and structure. *Prerequisites:* CSC 213, CSC 215 or CSC 217 or Junior Standing or Department Approval.

CSC 430 Computer Graphics and Animation (3.0); 3 cr. This advanced graphics class focuses on the programming techniques involved in computer animation. Algorithms and approaches for both character animation and physically based animation will be covered. Particular subjects may include skeletons, skinning, inverse kinematics, particle systems, rigid bodies, and other techniques. A good understanding of linear algebra and computer graphics is essential. *Prerequisites:* CSC 412, Introduction to Computer Graphics.

CSC 431 Compiler Design (3.0); 3 cr. This course includes principles and practices in the design of programming language compilers. Topics: lexical analysis, parsing theory (LL, LR, and LALR parsing), symbol tables, type checking, common representations for arrays, runtime conventions for procedure calls, storage allocation for variables, and generation of code. Students construct two compilers as the programming projects: the first is a simple predictive parser and the second is a rather large project using Lex and Yacc. *Prerequisite:* CSC 311.

CSC 432 Introduction to Artificial Intelligence (3.0); 3 cr. This is an introductory course to the field of modern artificial intelligence, where the main unifying theme is the idea of an intelligent agent. The course introduces several search methods for solving different problems, and explores particular subfields of AI. Specific topics include: search, game playing, constraint satisfaction, logic, machine learning, and probabilistic reasoning. *Corequisite:* CSC 313.

CSC 433 Applied Artificial Intelligence (3.0); 3 cr. The aim of this course is to introduce Game-related Artificial Intelligence fundamental concepts: Intelligent agents, Heuristic Search, Planning, Uncertainty, and Decisions Making (Fuzzy Logic), Learning (Genetic Algorithms). *Prerequisites:* CSC 213 or CSC 215.

CSC 435 Operating Systems and Networks (3.0); 3 cr. This course is intended as a general overview of operating systems and networks. In the beginning of the first part an introduction to Unix and the Unix shell is given. We will also cover some elements of computer organization. Then the overall structure and functionality of an operating system is discussed without going in too much technical detail. The second part of the course treats networking concepts especially as related to TCP/IP and the internet. The focus of the second part will be mostly on the IT manager perspective. *Prerequisite:* Junior Standing.

CSC 443 Computer Games Design (3.0); 3 cr. This course covers fundamental concepts in computer game design. The students learn how to design multi-level computer games, and then develop them using a programming language and a game engine. They also acquire an understanding of artificial intelligence, game mechanics, simulation, and game physics. *Prerequisite:* CSC 231.

CSC 446 Applied Database Systems (3.0); 3 cr. This course covers a wide variety of fundamental database topics including: database architecture, design, real-world implementation, and security and administration issues. The students learn how to build complex database objects: abstract data types, functions, procedures, sequences, triggers and views using a database management system. *Prerequisites:* CSC 226 or CSC 426.

CSC 450 Human-Computer Interaction (3.0); 3 cr. This course covers fundamental Human-Computer Interaction (HCI) principles related to User Interface (UI) design, prototyping, construction, and evaluation. Students learn about the importance UI usability. They also acquire the skills to design usable UIs and implement working versions of their designs using a presentation technology and a programming language. *Prerequisites:* CSC 213, CSC 215 or CSC 217.

CSC 456 Data Mining (3.0); 3 cr. This course addresses Data Warehousing and provides the students with a strong understanding of the fundamental Data Mining methodologies. The course covers topics such as data types and data preprocessing, Data Warehousing and OLAP, classification techniques, association analysis and clustering analysis. *Prerequisite:* Junior Standing.

CSC 457 Big Data Analytics (3.0); 3 cr. This course provides an introduction to special topics in big data analytics, with a focus on the state-of-the-art technologies, tools and systems that constitute big-data. The course will discuss primarily data mining and machine learning algorithms for analyzing very large amounts of data.

CSC 463 Advanced Software Development (3.0); 3 cr. This course is for students who want to learn Visual C# programming to develop .NET Framework applications using advanced technologies. Visual C# is employed to program using object-oriented and event-driven approaches to construct console, windows, and web applications that are robust, user-friendly, and effective. *Prerequisites:* CSC 213, CSC 215 or CSC 217.

CSC 472 - Advanced After Effects (3.0); 3 cr. This course helps students become better computer graphics artists, taking their use of After Effects from beginner to professional level. It will take them through advanced compositing and post-production techniques, as well as motion design and 2D motion graphics animation. In this course, students will work in small groups, and individually, and will construct no less than 3 projects, each of which will explore specific technical and rhetorical uses of this animation software. *Prerequisites:* CSC 202 or CSC 278.

CSC 475 Network Programming Lab (0.2); 1 cr. This course focuses on applied networking and distributed computing in Java. Networking with sockets. TCP/IP, Multicast, HTTP, RMI, Finger, and ping clients and servers. Multiprotocol chat systems & whiteboards. *Prerequisite:* CSC 425.

CSC 476 Database Programming lab (0.2); 1 cr. This course applies the theoretical concepts of database design using a specific application on a commercial database management system. The general concepts of this DBMS including transaction handling, optimization, recovery, and security are checked and compared with other commercial DBMS. *Prerequisites:* CSC 426 or CSC 446.

CSC 480 Internship (1.0); 1 cr. This assigned work at an industrial establishment allows students to integrate theory and practice by working in a supervised setting, with supervision done both by a faculty member and a company administrator. A final presentation and a report are required. The minimum duration of the internship is either 2 months on full-time basis, or 4 months on part-time basis. *Prerequisite:* Junior Standing.

CSC 485 Seminar (3.0); 3 cr. This course is designed to provide students an opportunity to study some topics in computer science that have not been included in the curriculum. *Prerequisite:* Junior Standing.

CSC 490 Senior Study (3.0); 3 cr. This capstone project allows the student to research, design, and implement prototype software supervised by a faculty member. A written document and an oral presentation are required at the end of the semester emphasizing on the design, on any related ethical issues, and on the impact on society. Senior Standing.

Undergraduate Courses: Management Information Systems

MIS 201 Management Information Systems (3.0); 3 cr. This course is designed to expose students, regardless of their field of study, to the major principles of Management Information Systems (MIS). It will help students to understand the role of information technology in the digital economy and to succeed in its emergence. *Prerequisite/ Corequisite: None.*

MIS 216 Computer Programming for Business (3.0); 3 cr. This course is an introduction to developing business application programs using a visual programming language as a tool. Programming fundamentals, effective GUI styles, access to databases will be taught using a lecture/lab combination during which students will experience hands-on programming. *Prerequisite/Corequisite:* None.

MIS 333 Business Intelligence (3.0); 3 cr. This course examines computer-based information systems which support decision makers: Decision Support Systems (DSS), GDSS, Data Warehouses, Expert Systems, and Executive Information Systems. Students will explore the development, implementation, and application of these systems and how these systems can be applied to current business problems. *Prerequisites:* CSC 226 or CSC 426.

MIS 345 Data Security and Network Administration (3.0); 3 cr. This course gives an in-depth examination of topics in the management of information technology security including security management, business continuity & disaster recovery, data communication protocols and networking standards. Students will understand the different information communication technologies (ICT) that underlie the Internet and Mobile technology. *Prerequisites:* MIS 310 or CSC 301.

MIS 431 Enterprise Computing Systems (3.0); 3 cr. The course looks at the organizational, strategic and implementation issues surrounding the use of enterprise-wide information systems organizations. It exposes students to the benefits of using enterprise systems to transform organizations from functional to process arrangements with emphasis on creating satisfaction for the customer. *Prerequisite:* Junior Standing.

MIS 434 Project Management for Information System (3.0); 3 cr. This course presents an integrated view of the concepts, skills, tools, strategies and techniques involved in the management of information systems projects. Project formulation, including development of scope, design options, integration with other projects and project development plans will be applied. *Prerequisite:* Junior Standing.

MIS 442 Knowledge Management (3.0); 3 cr. This course focuses on the critical role of managing knowledge in organizations today. It shows how KM technologies work to strengthen the effectiveness of an organization and how KM perspective is contributing to the understanding of management in a knowledge society under high-level of uncertainty and complexity. Topics include knowledge creation and transfer, tacit and explicit knowledge, KM strategy preparation, and CRM & SCM projects creation using KM. *Prerequisite:* Junior Standing.

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

THE DEGREE OF BACHELOR OF SCIENCE IN GEOGRAPHIC INFORMATION SYSTEMS (GIS)*

Mission

The mission of the Geographic Information System (GIS) program is to educate students in the principles and practices of computing with focus on geospatial knowledge and applications. The program prepares students for graduate school and careers in geospatial or IT-related fields.

Program Educational Objectives

- To prepare GIS graduates to effectively use their geospatial knowledge as a research tool, a decision-making tool, data analysis tool, and/or as a planning tool in large varieties of disciplines;
- To prepare GIS graduates for professional careers in GIS and remote sensing in roles including, but not limited to: application development, data production, and data analysis;
- To equip GIS graduates with the knowledge and skills to conduct advanced studies and research in remote sensing, environmental studies, geomatics, and related disciplines;
- To prepare GIS graduates with the communication and interpersonal skills to function and communicate effectively individually and within multidisciplinary teams; and
- To prepare graduates to identify and analyze legal, ethical, and social concerns associated with the GIS fields.

Learning Outcomes

All graduating GIS majors shall:

- Demonstrate a good practical background in computing, mathematics, and statistics with a focus on geospatial knowledge and applications;
- Demonstrate strong knowledge of the fundamental theories and concepts upon which the GIS technology is built;
- Demonstrate problem solving skills through spatial thinking and analysis.
- Produce cartographic maps;
- Demonstrate proficiency in remote sensing and related analysis;
- Demonstrate programming competence using modern programming languages;
- Demonstrate good knowledge of computer networking concepts and show a good practical experience in the usage of technology within the GIS environment;
- Demonstrate proficiency in database management system and show experience creating geographic databases;
- Design and implement a substantial GIS project;
- Recognize the need for, and demonstrate an ability to engage in, continuing professional development;
- Communicate effectively with a range of audiences and to function effectively on multidisciplinary teams to accomplish a common goal;
- Demonstrate their understanding of professional, ethical, legal, and social issues and responsibilities; and
- Apply for graduate programs in remote sensing, environmental studies, geomatics, and related disciplines.

*Not offered at the present time

Degree Requirements (91 credits)

Liberal Arts Curriculum (LAC) **27 cr.**

Core Requirements **28 cr.**
CSC 216, CSC 217, CSC 226, CSC 417, CSC 480, MAT 214, MIS 345, STA 210.

Choose 2 courses from the following list:
CSC 218, CSC 219, CSC 231, CSC 273, CSC 301, CSC 305, CSC 306, CSC 316, CSC 323, CSC 385, CSC 387, CSC 388, CSC 423, CSC 456, CSC 463, CSC 485, GIS 411, MIS 333, MIS 434, MIS 442.

Major Requirements **30 cr.**
ARP 454, CSC 446, GIS 211 or CSC 318, GIS 311, GIS 321, GIS 331, GIS 352, GIS 441, GIS 452, GIS 490.

Free Electives **6 cr.**

Minor in Geographic Information Systems (15 credits)

The main goal behind starting a minor in Geographic Information Science is to provide students from different backgrounds with the capacity to apply GIS in their area of knowledge and to enhance their skills in a rapidly expanding market of computer-based technology.

Geographic Information Systems includes Geographic Information Systems, Global Positioning Systems, and Remote Sensing:

- A Geographic Information Systems (GIS) is a computer-based tool for mapping and analyzing things that exist and events that happen on earth. GIS technology is a special case of information systems where database consists of features, activities, or events that are definable in space as points, lines, or areas;
- Global Positioning System (GPS) is a satellite system that allows users to collect precise geographic data for use in mapping;
- Remote sensing refers to any technique whereby information about objects and the environment is obtained from a distance with the aid of aircrafts and satellites.

The multidisciplinary nature of the geographic information systems allows students from any field of study - i.e. whose majors include engineering, natural and applied sciences, business, management, marketing, public administration, social sciences, political science, architecture, education, and others - to declare this minor.

Admission Requirements
General requirements for admission to this minor are those of the University policy on Undergraduate Academic Minors. No additional requirements are needed.

Pool of Courses
CSC 318 or GIS 211, GIS 311, GIS 352, GIS 331, GIS 411, GIS 441, GIS 321, GIS 452.

Graduation Requirements and Suggested Schedule
To satisfy the graduation requirements of a minor in Geographic Information Systems, students must pass 5 courses from the pool of courses as follows:

- First semester (2 courses; 6 credits): CSC 318 or GIS 211, GIS 352;
- Second semester (2 courses; 6 credits): GIS 311, GIS 441;
- Third semester (1 course; 3 credits): GIS 321 or GIS 331 or GIS 452 or GIS 411.

"D" is the passing grade for each course, and the minor should be completed with a GPA of 2.0.

Undergraduate Courses: Geographic Information Systems

GIS 211 Principles of Geographical Information Sciences (3.0); 3 cr. This course is an introduction to Geographical Information System, data structure and information, topology, attributes and database organization, map basics and cartographic representations, and Remote Sensing and GPS.

GIS 301 Cadastral and Field Surveying (3.0); 3 cr. This course covers multiple branches of surveying, earth surface determinations, cadastral delimitation, Ellipsoid, and Geoids. Topics include: mapping of the earth's surface. Properties of plane representation, mapping procedures used in topography. Surveying instruments. Determination of surveying points network (azimuth, surveying intersection, three points' problem, and traverse). Leveling instruments. Surveying of details (side shots-abscissa and ordinates, lateral oblique). Representation of relief (Methods used, construction of contour lines). Longitudinal profile- cross sections. *Prerequisites:* MAT 225 and CSC 270.

GIS 311 Desktop GIS (3.0); 3 cr. This course focuses on the design and implementation of geo-database and the integration and management of geographic data. *Prerequisites:* GIS 211 or CSC 318.

GIS 321 Spatial analysis and Modeling (3.0); 3 cr. This course covers the different technique in spatial analysis and modeling. Its main objective is to teach students how to solve problems related to geographic data and extract the necessary information from given data. It focuses mainly on the following topics: vector analysis, geoprocessing, network analysis, spatial analysis, 3D analysis and hydrological analysis. *Prerequisite:* GIS 211.

GIS 331 Implementations of GIS (3.0); 3 cr. This course focuses on automating geoprocessing, spatial analysis, and mapping generation in the ArcGIS environment using Python script and ArcPy library. *Prerequisites:* CSC 217 and GIS 311.

GIS 341 Digital Mapping and Cartography (3.0); 3 cr. This course introduces the concepts and theory of digital mapping, along with basics of image interpretation and data collection. Also this course covers the elements of general and thematic cartography, layout design, and map projection. *Prerequisite:* GIS 311.

GIS 352 Theories of Remote Sensing (3.0); 3 cr. This course covers concepts of Remote Sensing, physics of Remote Sensing, introduction to air photo interpretation, photogrammetry, Remote Sensing sensors and platforms, digital image processing, and overview of applications of remote Sensing.

GIS 355 Surveying for Construction (3.0); 3 cr. This course aims to provide a practical guide into construction surveying from a main contractor's perspective. Students will acquire an understanding of the skills and competencies required by surveyors. Following a brief introduction, the course's early chapters cover measurement methodology and the contractor's business, with the rest of the chapters discussing commercial and contractual management of a construction project, including day-to-day running from commencement through to completion, in a highly practical way. *Prerequisite:* GIS 301.

GIS 401 Road Design and Surveying (3.0); 3 cr. This course introduces students to the concept of road location with particular emphasis on the design of the geometric elements of the road including horizontal and vertical curves. The course is comprised of two components; theory of road design and design by CAD. It is expected that students understand the interpretation of a surveyor's field book for plan production and correct standards of plan presentation. Traffic volume. Cross section. Highway alignment. *Prerequisites:* GIS301, GIS 352, PHS 201.

GIS 405 Land Division and Estimation (3.0); 3 cr. This course is aimed at providing students with knowledge of planning principles and practice, and the major planning issues confronting urban societies. The course begins with a study of the evolution of urban and regional planning theory and practice, with an emphasis on urban and rural design. This is followed by a review of current planning processes as they are applied at capital, regional, and local areas in Lebanon. The course concludes with a discussion of the major urban planning and land division issues that will need to be resolved in the coming years plus how to establish and apply norms and standards for land estimation and valuation. *Prerequisites:* GIS301 and GIS 352.

GIS 411 Spatial Geodesy (3.0); 3 cr. This course covers the theory and operation of the Global Positioning System (GPS) and other Global Navigation Satellite Systems (GNSS). Design of GPS networks in accordance with current standards and specifications. Laboratory exercises are used to introduce the students to a variety of GNSS applications. *Prerequisite:* Senior Standing.

GIS 441 Cartography, Geodesy and GPS (3.0); 3 cr. This course introduces the nature of cartography, basic geodesy, map projections, scaling, referencing and coordinate systems, cartographic perception and design. It also describes Global Positioning System (GPS), map data collection and design.

GIS 452 Advanced Remote Sensing (3.0); 3 cr. This course focuses on hands on applications of Remote Sensing data collection, data preparation and processing, image distortion, radiometric and geometric corrections, image enhancement and classification, image mosaicking, space triangulation, and digital representation of relief stereoscopy. *Prerequisite:* GIS 352.

GIS 490 Senior Project (3.0); 3 cr. This is an assigned project supervised by a faculty member. The grade will be based on project evaluation and individual oral presentation. *Prerequisite:* Senior Standing.

COMPUTER SCIENCE

THE DEGREE OF MASTER OF SCIENCE IN COMPUTER SCIENCE

Mission

The mission of the MS program in Computer Science is to provide students with the knowledge and skills to become successful practitioners and leaders in the computing fields and to prepare them for further higher education in computer science.

Program Educational Objectives

The Computer Science department seeks to provide MS students graduates with:

- Advanced knowledge in the Computing fields, which include theoretical foundations and fundamentals of systems and software;
- A breadth of knowledge to establish a foundation for Ph.D. studies in Computer Science and related fields;
- Required knowledge and skills to assume responsible positions in industry and government at the research, planning, and development levels.

Program Learning Outcomes

Upon graduation, students will be able to:

- Demonstrate competence in the Computing fields, which include fundamentals of systems and software;
- Demonstrate a breadth of knowledge in a variety of application areas in Computer Science, including databases, networks, software engineering, information security and multimedia.
- Demonstrate their competence in the analysis, design, development and testing of software systems and computer systems.
- Recognize the need for, and demonstrate an ability to engage in, continuing professional development.
- Demonstrate their ability to communicate effectively with a range of audiences and to show leadership qualities.
- Demonstrate their understanding of professional, ethical, legal and security issues and responsibilities.
- Apply for Ph.D. programs in Computer Science and show their readiness for research and development in industry
- Demonstrate an in-depth knowledge of a sub-area of Computer Science and be able to further the frontier of knowledge in that field.
- Communicate effectively as researchers and educators.

Admission Requirements

In addition to the University graduate admission requirements, students holding a BS in Computer Science with a cumulative GPA of at least 3.0 or the equivalent will be accepted, while those with a cumulative GPA of 2.7-2.99 or the equivalent will be conditionally accepted. Students conditionally accepted can take up to 6 credits (two 3 credit courses) during the first semester, and the conditional acceptance will be removed when the student receives a minimum of a "B" grade on each 3-credit course, taken during his or her first semester.

Students can be accepted with some computer undergraduate remedial courses. Students must achieve an average passing grade of 2.7/4.0 ("B-") across the remedial undergraduate courses. These supplementary credits do not count towards the 30 credits required for the MS degree.

A maximum of 9 transfer credits from previous graduate work completed at another accredited institution of higher education may be transferred upon the discretion of the Faculty Graduate Committee.

Graduation Requirements
To satisfy the requirements for the degree of Master of Science in Computer Science, the student must complete a total of 30 credits with a cumulative GPA of at least 3.0/4.0 with no more than 2 "Cs." The minimum passing grade of a graduate computer science course is "C."

Degree Requirements (30 credits)

1- Complete the following three core courses: **9 cr.**
MAT 661 or STA 614, CSC 691, CSC 692.

2- Major requirements **9 cr.**
Track 1 (Computer Science)
CSC 616, CSC 623, CSC 626.

Track 2 (Data Science)
CSC 608, CSC 609, CSC 616.

Track 3 (Computer Graphic & Animation)
CSC 612, CSC 633, CSC 650.

3- Complete 4 elective courses from the following pool **12 cr.**
Track 1 (Computer Science)
CSC 603, CSC 605, CSC 608, CSC 609, CSC 611, CSC 615, CSC 622, CSC 625, CSC 631, CSC 632, CSC 636, CSC 645, CSC 647, CSC 648, CSC 650, CSC 658, CSC 670, CSC 685, GIS 621.

Track 2 (Data Science)
CSC 603, CSC 605, CSC 611, CSC 615, CSC 622, CSC 623, CSC 625, CSC 626, CSC 631, CSC 632, CSC 636, CSC 645, CSC 647, CSC 648, CSC 650, CSC 658, CSC 670, CSC 685, GIS 621.

Track 3 (Computer Graphic & Animation)
CSC 603, CSC 605, CSC 608, CSC 623, CSC 625, CSC 631, CSC 632, CSC 636, CSC 648, CSC 670, CSC 673, CSC 677, CSC 679, CSC 685, GIS 621.

The Faculty of Natural and Applied Sciences has specific regulations and guidelines governing Master's thesis courses, the jury, oral defense procedures, grading criteria, manuscript submission, and other relevant information. When registering for Master's thesis courses, each graduate student will receive detailed information about these regulations and guidelines.

Graduate Courses: Computer Science

CSC 603 Objected-Oriented Applications (3.0); 3 cr. This course emphasizes the use of Object-Oriented Architectures and Components in order to build business to business and business to client applications. The multi-tier architecture will be studied in depth through Enterprise Java Beans (EJB) specifications. The development environment is Jbuilder 4 of Borland.

CSC 605 System Analysis and Design (3.0); 3 cr. This course emphasizes the design aspects of systems development, including logical and physical design, implementation, resting and operation. State-of the art system development process, methods and tools are presented.

CSC 606 Operating Systems and Security (3.0); 3 cr. This is hands-on system vulnerabilities like stake and heapoverflows, return to libc attacks etc. Attack counter measures, such as stack guard and address space randomization are discussed. The students are expected to write their own exploits in addition to applying known exploits in a controlled linux/x86 environment. Viruses and worms are covered along with defenses like disinfection, integrity checking and sandboxing.

CSC 608 Advanced Data Science (3.0); 3 cr. This course presents the principles of data science and the methods of data-analytic thinking necessary for extracting useful knowledge from data. It covers the full data science process that includes: envisioning the problem, applying data science techniques, and deploying the results to improve decision making. *Prerequisite*: Graduate Standing.

CSC 609 Information Presentation and Visualization (3.0); 3 cr. This course covers the concept of data visualization for practical and efficient information sharing, and the integration of visualization in the work of data science. Specifically, it exposes the students to the principles, methods, and techniques of data visualization and it will enable them to create effective visual representations suitable for data exploration and information discovery. Students will work on real problems and data sets to design and implement effective visualizations, using modern tools and frameworks. Additionally they will perform research on the latest developments and techniques in this field.

CSC 611 Advanced Theory of Computation (3.0); 3 cr. Topics in this course include primitive recursive functions, Church thesis, recursive and recursively enumerable sets, time and space complexity measures, the classes P and NP-completeness, and hierarchy of complexity.

CSC 612 Advanced Computer Graphics (3.0); 3 cr. Topics in this course include: mathematical techniques for curve and surfaces; color systems; fractals hidden lines and hidden shad up; surface mapping and ray tracing; techniques of animation.

CSC 613 Computer Vision and its Applications (3.0); 3 cr. This course focuses on computer techniques for understanding and interpreting visual data, physics of vision, boundary detection of objects, region growing, analysis of texture and motion, and analysis on objects in scenes.

CSC 614 Modeling and Simulation in OOP (3.0); 3 cr. This course focuses on encapsulation, use of inheritance (including multiple inheritance), collections and iterators, run-time typing identification, exception handling. Some aspects of distributed and parallel object-oriented systems.

CSC 615 Advanced Computer Architecture (3.0); 3 cr. This course focuses on early systems, parallelism and parallel processing, vector processors, array processors, associative processors, VLIW architecture, memory and I/O subsystems, networking. Case Study: RISC architecture.

CSC 616 Advanced Database Systems (3.0); 3 cr. This course covers topics related to distributed databases design (bottom up, and top down), in addition to the internal operation of a relational database (query optimization, concurrency, and recovery) in both centralized and distributed environments. It also covers rising topics in the field of databases (web, cloud, noSQL, NewSQL).

CSC 621 Advanced Compiler Design (3.0); 3 cr. The course will cover some of the core-topics, already studied in CSC 431 (or in some equivalent course at another university), but with more details and rigor. Some of the topics are: lexical analysis, parsing theory (LL, LR, and LALR parsing), symbol tables, type checking, common representations for arrays, runtime conventions for procedure calls, storage allocation for variables, generation of code, and code optimization.

CSC 622 Advanced Analysis of Algorithms (3.0); 3 cr. The course will cover some of the core-topics, already studied in CSC 325 (or in some equivalent course at another university), but with more details and rigor. In addition, we will present a selection of advanced topics, mainly the theory of NP-completeness and algorithms for parallel computers.

CSC 623 Advanced Software Engineering (3.0); 3 cr. This course covers a number of advanced software engineering topics, which span different stages of the software development lifecycle, from requirements elicitation and analysis to maintenance. The students are also exposed to the research being carried out in this discipline by exploring papers that are relevant to the covered topics.

CSC 625 Advanced Operating Systems (3.0); 3 cr. This course discusses advanced topics in operating systems with Special emphasis on distributed computing, and the services provided by distributed operating systems. Important topics include naming, security, remote procedure call, networks, concurrency, transactions, parallel computing, shared memory, message passing, and scale.

CSC 626 Computer Communications and Networks (3.0); 3 cr. This course covers advanced concepts in computer networks. Specifically, we will study main protocols of the TCP/IP stack, Mobile IP, DNS, etc. The course also covers some fundamental concepts in intra- and inter-domain routing and introduces relevant routing Internet protocols. In addition, selected topics in networking that are considered as hot topics today such as Cloud computing, 3G/4G.

CSC 631 Multimedia Systems (3.0); 3 cr. This course provides the background needed for the design and development of computer-based systems that combine text, still images, sound, animation, and full motion video. The course will examine design methodologies used in planning these systems, and authoring languages used to create such systems.

CSC 632 Artificial Intelligence (3.0); 3 cr. This course provides principles of problem solving and planning and machine learning systems. Introduction to current State-of-the art expert systems and expert systems tools.

CSC 633 Digital Image Processing (3.0); 3 cr. This course provides image perception, sampling, quantization techniques, transforms, enhancement techniques, like noise reduction, blurring, sharpening, edge detection, and contrast enhancing, image restoration and analysis.

CSC 636 Computer Security (3.0); 3 cr. This is a graduate course on computer security. The emphasis is on formal model and the foundations of computer security. Topics include: access control and protection models. Security, confidentiality

and integrity policies are also discussed and representative models, such as Bell-LaPadula, Biba and Chinese wall are chosen as examples. Information flow, auditing, and vulnerability analysis are also covered.

CSC 645 Neural Networks for Computing (3.0); 3 cr. This course is an introduction to neural networks algorithms, adaptive behavior, and associative learning. Applications to cognitive information processing and control, and signal processing.

CSC 647 Decision Support Systems (3.0); 3 cr. This course focuses on decision Support Systems (DSS) help users in solving problems and in reaching a decision based on available data, knowledge bases, and decision models. This course will expose students to theoretical DSS concepts, and to practical issues. Topics include: DSS analysis, modeling, and development; data warehousing, mining and OLAP; knowledge management and inference techniques.

CSC 648 Digital Media Analytics (3.0); 3 cr. This course introduces methods for analyzing and understanding how people use Social media technologies (such as Twitter and Facebook) and their implications. Specifically, the course introduces students to social media analysis and focuses on concepts and techniques for retrieving, exploring, visualizing, and analyzing social network and social media data.

CSC 650 Advanced Human-Computer Interaction (3.0); 3 cr. This course covers various Human-Computer Interaction (HCI) topics such as designing user interfaces (UIs), conducting empirical studies to evaluate UI designs, and engineering adaptive model-driven interactive software systems. The students are also exposed to the HCI literature, by exploring papers that are relevant to the covered topics.

CSC 658 Recommender Systems (3.0); 3 cr. The course starts by introducing the fundamental concepts of recommender systems such as collaborative filtering and content-based filtering. It then advances to cover the latest innovations in recommender systems such as Social Network-Based Recommender Systems.

CSC 670 Selected Topics in Computer Science (3.0); 3 cr. This course covers topics of current interest in computer science.

CSC 673 Advanced Character Animation (3.0); 3 cr. In this course, students will develop a higher understanding of the twelve principles of animation, an understanding of body mechanics, and the anatomy and physiology of body walks. They will learn to integrate key storytelling components, apply staging and composition to their scenes. They will also learn facial animation, as well as advanced techniques of anticipation, overlapping action and timing and spacing.

CSC 677 Digital Art and Advanced Sculpting (3.0); 3 cr. This course covers 2D Digital Art topics and how to transfer work from Photoshop to Zbrush to create a full Sculpted Character. Topics covered include: Character Drawing in Photoshop, Mate Painting, Shadows and Highlights, Environment Art, Design Principles and Character Anatomy, Advanced Sculpting Tools, Realistic Hair Simulation and Creation, Hard Surface Sculpting and Modeling in Zbrush.

CSC 679 Advanced 3D Compositing (3.0); 3 cr. This course introduces students to the advanced techniques of node-based compositing using "Nuke" software. Emphasis is placed on color correction, rotoscoping, color management, painting, tracking, color keying, matting, and 3D workflows. Classes include compositing demonstrations, discussions of node-based methods, project critiques, and industry tips. Students will explore various styles of compositing utilizing Nuke, working towards a final project for presentation.

CSC 685 Readings in Computer Science (3.0); 3 cr. This course is designed primarily for those students wishing to study a particular area in computer science under the supervision of a faculty member.

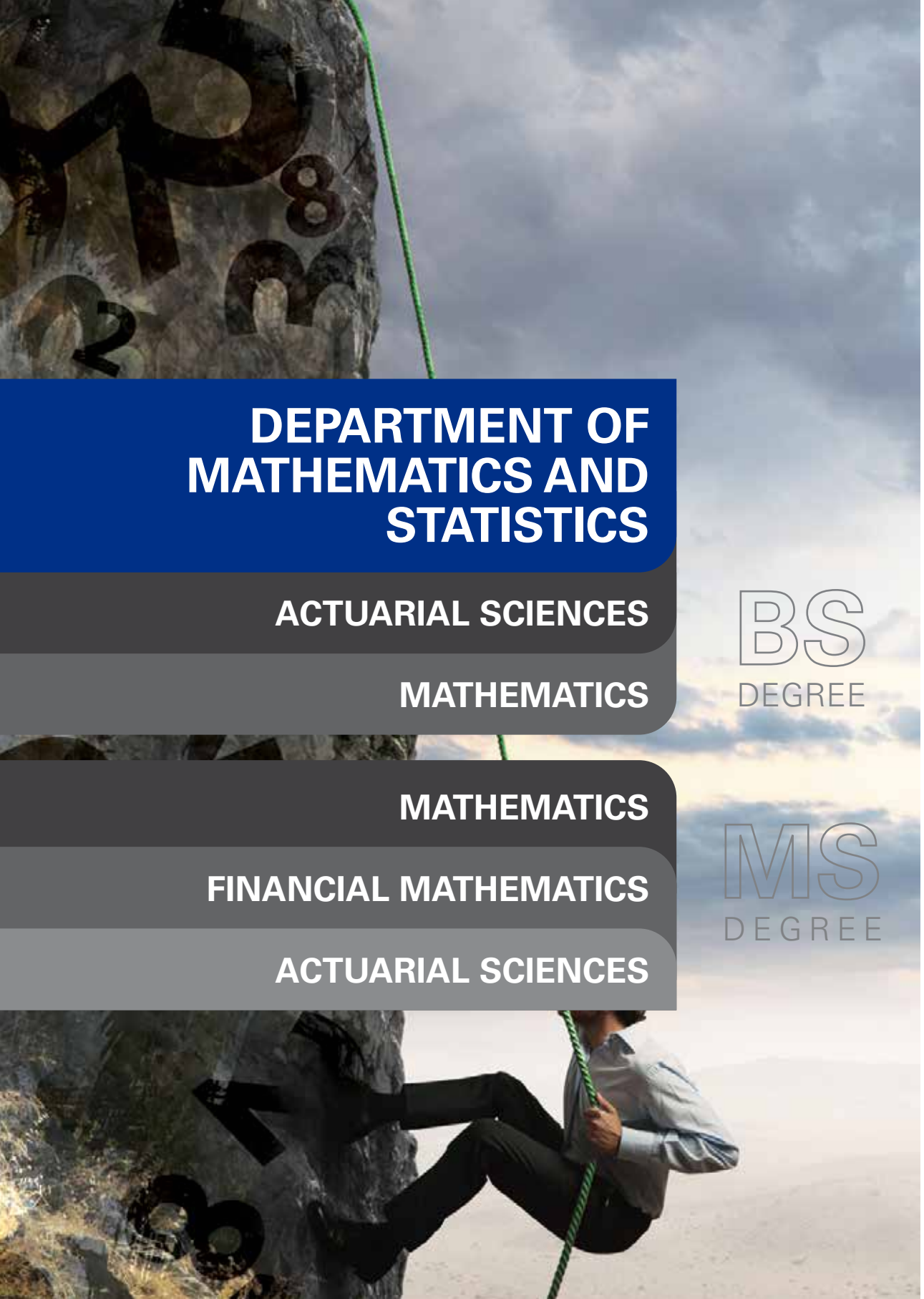
CSC 690 Master Thesis in Computer Science (6.0); 6 cr. The research for the master thesis must show the student's proficiency in approved topics in computer science.

CSC 691 Master Thesis in Computer Science I (3.0); 3 cr. The research for the master thesis must show the student's proficiency in approved topics in computer science.

CSC 692 Master Thesis in Computer Science II (3.0); 3 cr. This course is a continuation of CSC 691.

GIS 611 GIS and Remote Sensing (3.0); 3 cr. This course provides an introduction to Geographic Information System (GIS) and Remote Sensing (RS) techniques and their applications in urban planning. It emphasizes the spatial interactions between humans and the biophysical environment through providing students an understanding of GIS and RS fundamentals.

GIS 621 Spatial Data Analytics (3.0); 3 cr. This course highlights the role and importance of GIS and geographic data in the analysis, interpretation, and visualization of large and complex datasets. This course covers various topics such as essential GIS and spatial data concepts, GIS – Big Data integration, spatial data visualization, advanced spatial analysis, and geostatistics. Students will retrieve, prepare and analyze real-life data to solve real-world problems using GIS software. Additionally they will perform research on the latest developments and techniques in this field.



DEPARTMENT OF MATHEMATICS AND STATISTICS

Professors: Eid, George M.; Saliba, Holem.

Associate Professors: Abou Jaoude, Abdo; Ghalayini, Bassem; Hage, Rémi; Keirouz, Malhab; Malkoun, Joseph; Maroun, Mariette; Nakad, Roger; Ziad, Rached.

Senior Lecturer: Hajjar Muça, Theresa

Lecturer: Mourani, Natacha

Mission
The mission of the Department of Mathematics and Statistics is to serve NDU students by integrating preparatory education; the general education core; remedial and service courses for science, architecture, business and engineering; and mathematics or actuarial sciences majors at the undergraduate and graduate levels. The Department promotes excellence in teaching and offers a broad selection of courses that can be tailored to meet diverse student needs. Moreover, the Department is committed to enhancing and developing its research output and to supporting other professional activities.

Programs of Study
The Department offers programs in Mathematics and Actuarial Sciences leading to the degrees of:

- BS in Mathematics (90 credits)
- BS in Actuarial Sciences (94 credits)
- MS in Mathematics (33 credits)
- MS in Financial Mathematics (33 credits)*
- MS in Actuarial Sciences (30 credits)

The Department also offers the following minors:

- Minor in Actuarial Sciences (18 credits)
- Minor in Mathematics (15 credits)

The Undergraduate Program
The undergraduate program in Mathematics leads to a BS in Mathematics, BS in Actuarial as well as a minor in Mathematics or in Actuarial Sciences.

The BS in Mathematics is designed for students who value the study of mathematics for its own sake, and for its applications. The Mathematics track is recommended for those who seek employment in mathematics and those interested in a Master's degree or in pursuing a Ph.D. to prepare for a career in research or university-level teaching.

*Not offered at the present time

The Mathematics minor provides an excellent foundation in mathematics, which can serve students well in careers that require quantitative analysis. The Mathematics minor can also provide an enjoyable supplement for students who love mathematics but have already decided to pursue another major.

The BS in Actuarial Sciences is designed for students who want to become actuaries and want a program that integrates business, economics, and mathematics. Actuaries are trained to analyze risk and are typically employed by insurance companies, banks, the government, and companies that handle retirement funds.

The minor in Actuarial Sciences is tailored to the needs of students interested in actuarial careers, especially in business. It provides students with the necessary knowledge to work in life and health insurance, pension funds, and financial security.

THE DEGREE OF BACHELOR OF SCIENCE IN ACTUARIAL SCIENCES

Mission

The mission of the Bachelor of Actuarial Sciences program at NDU is to:

- Produce graduates who can contribute significantly to the financial security of individuals and corporations through proper training on how to identify, quantify, assess, and manage risk;
- Provide students with a curriculum aligned in content and rigor with the learning outcomes of the Society of Actuaries. Such program prepares our graduates to successfully write at least three of the preliminary exams of the SOA, leading toward professional designations from international actuarial societies; and
- Provide students with the theoretical background needed to qualify them to pursue graduate-level education in Actuarial Science or related fields.

Program Educational Objectives

Graduates of the Bachelor Degree in Actuarial Sciences will be prepared to:

- Establish a professional career as a leader actuary or member of teams who provides prudent decisions for advanced business, financial, and actuarial problems;
- Have in depth knowledge of fundamental principles of the theories and techniques of scientific and Actuarial Sciences methodologies to describe, evaluate and analyse actuarial, financial, and statistics problems;
- Have interpersonal skills needed for productive teamwork and effective communication in the actuarial practices;
- Earn a graduate degree in Actuarial Sciences or a related field, and receive professional certification by sitting for some of the professional actuarial exams of international actuarial societies; and
- Identify, evaluate, and address legal and ethical conducts promulgated by the Actuarial profession and international actuarial societies.

Program Learning Outcomes

- An ability to apply techniques of mathematics, probability, and statistics to identify, formulate, and solve problems relevant to actuarial practices.
- An ability to formulate, implement, and test an actuarial model using sound scientific methodology subject to economical, accounting, regulatory, and financial constraints.
- An ability to describe an actuarial, financial, or statistical problem, gather relevant data, evaluate its reliability, analyze it, and draw conclusions.
- An ability to effectively write and orally communicate a technical report and give efficient presentations to a specialized or general audience.
- An ability to understand the ethical and professional aspects of the actuarial profession, as well as the impact of professional and scientific development on social welfare.
- An ability to function effectively on teams, and establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

Students enrolled in the BS degree will be prepared to take a series of examinations in actuarial science leading to ASA and ACAS designation under the American Society of Actuaries (SOA) and Casualty Actuarial Society (CAS). They also would benefit from Validation by Educational Experience (VEE) approved credits for "Economics," "Mathematical Statistics," and "Accounting Finance" required for the attainment of the above-mentioned designation.

Admission Requirements
For admission requirements to the degree of BS in Actuarial Sciences, refer to the section titled "Undergraduate Admission" of this Catalog.

Graduation Requirements
To receive the degree of BS in Actuarial Sciences, students must fulfill all requirements of the degree program, complete all required courses, accumulate a total of 94 credits with an overall GPA of at least 2.0/4.0 and a minimum GPA of 2.0/4.0 in both the core and major requirements, and clear all accounts with the University. Candidates for degrees are reminded that grades of "I" assigned during the last semester to courses required for graduation will result in delaying their graduation.

Degree Requirements (94 credits)

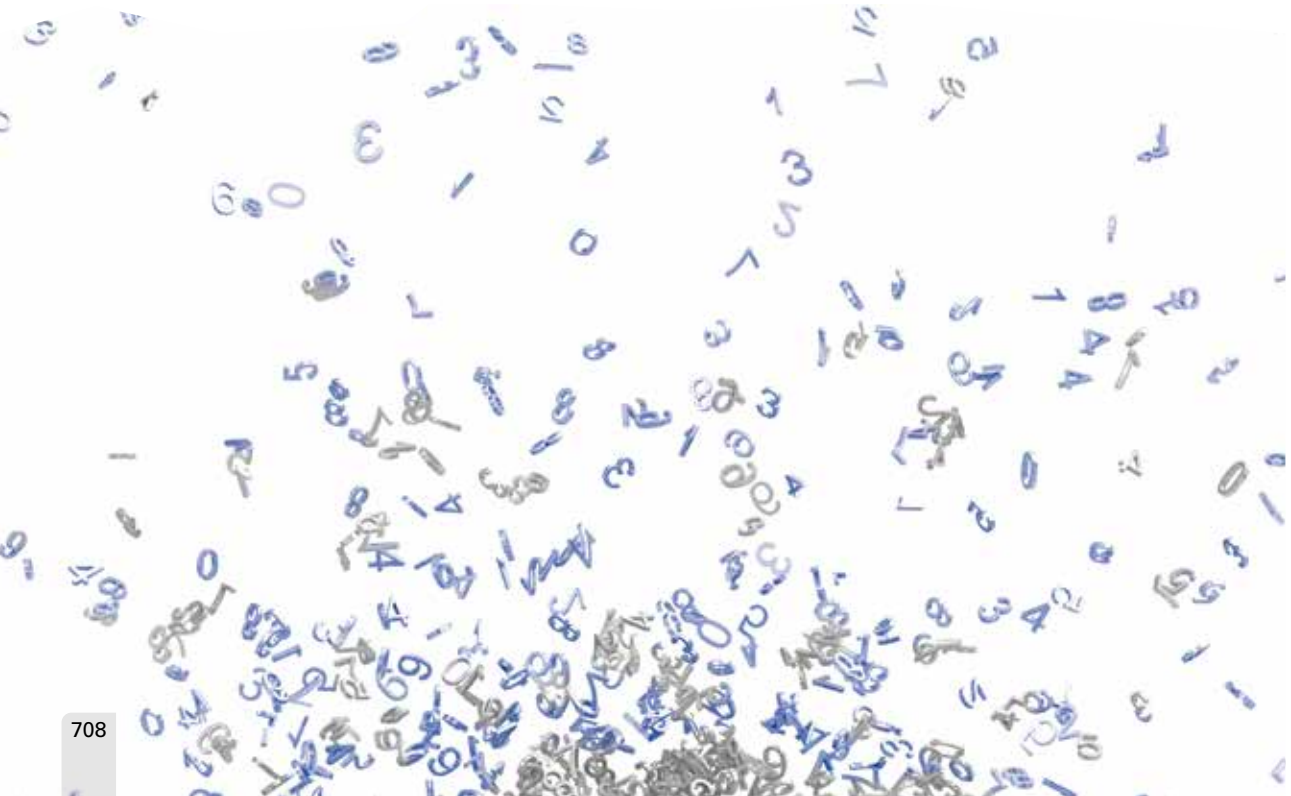
Liberal Arts Curriculum (LAC) **27 cr.**

Core Requirements **27 cr.**
ACO 201, ECN 211, ECN 212, MAT 206, MAT 213, MAT 215, MAT 224, MAT 235, CSC 210.

Major Requirements **32 cr.**
ACS 300, ACS 310, ACS 314, ACS 324, ACS 375, ACS 424, ACS 450, ACS 480, MAT 325, STA 312, STA 315, STA 370.

Technical Electives **6 cr.**
ACO 202, BAF 311, BAF 312, CSC 212, CSC 226, CSC 310, MAT 339.

Free Electives **2 cr.**



Minor in Actuarial Sciences (18 credits)

This minor introduces students to the mathematical foundation of risk assessments under an insurance context. It suits students majoring in Business, Physics, Computer Science, Mathematics, or Engineering interested in developing their understanding of future risk evaluation.

Admission Requirements
General requirements for admission to this minor are those of the University policy on Undergraduate Academic Minors. No additional requirements are needed.

Pool of Course and Graduation Requirements
To satisfy the graduation requirements of a minor in Actuarial Sciences, students must take:
MAT 224, MAT 325/MAT 326, MAT 206

and 9 credits from the pool:
ACS 375, ACS 310, ACS 314, ACS 424, ACS 450, ACS 324, STA 312, STA 315

"D" is the passing grade for each course, and the minor should be completed with a minimum GPA of 2.0.

Undergraduate Courses: Actuarial Sciences

ACS 300 Actuarial Problem Solving (1.0); 1 cr. The course is designed specifically to solve probability-based problems and prepare students to pass the probability actuarial exams of international actuarial societies and institutes. *Prerequisite:* MAT 325.

ACS 310 General Insurance (3.0); 3 cr. The course introduces pricing and reserving for short-term insurance and reinsurance coverages, loss reserving, techniques for estimating outstanding claims, and ratemaking techniques. The course includes the key concepts underlying general insurance practice as to the professionalism requirements, good practices measures, and the responsibilities of actuaries. *Prerequisites:* MAT 325 or MAT 326.

ACS 314 Actuarial Mathematics I (3.0); 3 cr. The course introduces the basic concepts of actuarial mathematics. It covers the survival distribution for continuous future lifetime, curate future lifetime random variables, force of mortality, and life tables. Calculation and evaluation processes for expectation of future lifetime, actuarial present value of life insurance payable at the moment of death (continuous) or at the end of year of death (discrete) are developed. The relation between the expected present value of a benefit paid at the moment of death and that payable at the end of the year of death is described, and the effect of changes in principal assumptions is calculated. *Prerequisites:* MAT 325 or MAT 326, MAT 206.

ACS 324 Actuarial Mathematics II (3.0); 3 cr. The course focuses on the actuarial present value random variables for life annuities for a single life, their identifications and calculations. It also highlights the relationship between annuities and insurance, and develops calculation processes for premium and policy value. Actuarial approaches to estimation and inference are used to construct the life tables and survival models. *Prerequisite:* ACS 314.

ACS 375 Modeling Techniques in Actuarial Practice (3.0); 3 cr. In this course, the student will define key concepts concerning loans and how to perform related calculations. The student will also be able to define, recognize, and calculate, when applicable, any of the following: bond price, book value, amortization of premium, accumulation of discount, redemption value, par value, yield rate, coupon amount, coupon rate, term of a bond, callable/non-callable bonds, rate of return, forward rates, spot rates, current value, yield curve, stock price, and stock dividend. Cash flow analysis and applications of duration and convexity to approximate the effects of changes in interest rate on the present value of future assets and liabilities are used to construct immunized investment portfolios for asset-liability management. In addition, the course introduces the basic theory of options and derivatives, using risk neutral expected present values, under the binomial and Black-Scholes models. *Prerequisite:* MAT 206. *Corequisite:* MAT 325.

ACS 424 Actuarial Modeling (3.0); 3 cr. The course describes statistical techniques and models in Actuarial Sciences and illustrates the application of the estimation models for frequency, severity, and aggregate loss models, as well as the calculations of their characteristics. The course presents the credibility theory and highlights the limited fluctuation (classical) credibility approach. *Prerequisite:* STA 315.

ACS 450 Actuarial and Data Sciences (3.0); 3 cr. The course equips students with foundation elements of predictive analytics tools and techniques for solving business and actuarial problems. Through several applications, the course illustrates linear models, generalized linear models, decision trees, principal component analysis, and cluster analysis. Students will acquire skills to fit these statistical models, evaluate their performance, select model features, and interpret the output produced. *Prerequisites:* STA 315 and STA 312.

ACS 480 Actuarial Internship (1.0); 1 cr. The internship course allows actuarial senior students to integrate in insurance/reinsurance companies, financial institutions, and consulting firms to reinforce their assimilation of the theoretical concepts learned with hands-on applications. The course gives students the opportunity to build professional networks and participate in devising actuarial and financial models that help in finding solutions to a wide variety of risks. *Prerequisites*: ACS 314 and ACS 310.

Undergraduate Courses: Statistics

STA 101 Basic Statistics (3.0); 3 cr. This is an introductory course designed to introduce students to basic statistical techniques in order to analyze and interpret results such as mean, mode, median, standard deviation etc... The topics covered include: frequency distributions, graphing, measures of central tendency and dispersion, and probability law.

STA 202 Statistics for Humanities (3.0); 3 cr. This course is designed to introduce students of the humanities to the most important basic statistical techniques used in their field of research, and to the SPSS software package. The course material covers data collection, organization and graphing; describing distributions: scores, central tendency, and variation; sampling and probability distributions; estimation and hypothesis testing; chi-square test; correlation; analysis of variance. The associated computer lab sessions allow the students to apply the methods learned to data sets and interpret findings.

STA 203 Biostatistics (3.0); 3 cr. This course includes the fundamental principles of statistics as they apply to biological problems, including statistical inference, analysis of variance, and. correlation regression. A software package will be used. *Prerequisite:* Sophomore Standing.

STA 210 Statistics for Business and Economics (3.0); 3 cr. This course focuses on descriptive statistics; measures of central tendency and dispersion, probability laws; random variables, sampling distributions; estimation; hypothesis testing simple linear regression; analysis of variance and and Chi-square. A statistical software package will be used. *Prerequisite:* Sophomore Standing.

STA 220 Applied Statistics (3.1); 4 cr. This course focuses on descriptive statistics; frequency distribution and graphical representation; measures of central tendency, dispersion and location; probability rules; selected discrete and continuous probability distributions; the central limit theorem; point and interval estimation of the population parameters; sample size determination; hypothesis testing (one sample and two samples cases for the means, proportions and standard deviations); one-way analysis of variance; chi-square tests of goodness of fit, independence and homogeneity; simple linear regression. Emphasis on applying the learned statistical methods using SPSS through hands-on experience. *Corequisite:* MAT 204.

STA 312 Statistics Modeling (3.0); 3 cr. The course introduces the concepts of simple linear regression and multiple regression analysis through discussion of the assumptions underlying linear regression models, diagnostic tests, and correction methods for heteroscedasticity, multicollinearity and serial correlations. The course also presents deterministic and stochastic time series models and includes the basic smoothing and extrapolation techniques, model specification, parameter estimation and forecasting for the different time series models. *Prerequisite*: STA 315.

STA 315 Mathematical Statistics (3.0); 3 cr. The course discusses transformed random variables (transformation techniques, convolution, and moment generating functions); distributions such as t-distribution, Chi-square distribution, and F-distribution; sampling distribution and Estimation theory such as parametric estimation, interval estimation, hypothesis testing, and goodness of fit tests. *Prerequisite:* MAT 325.

STA 370 Stochastic Processes (3.0); 3 cr. The course introduces the basic probabilistic methods of stochastic processes. Topics include: conditional probability and conditional expectation, discrete/continuous-time Markov Chains, the exponential distribution, and the Poisson process. *Prerequisite:* MAT 325.

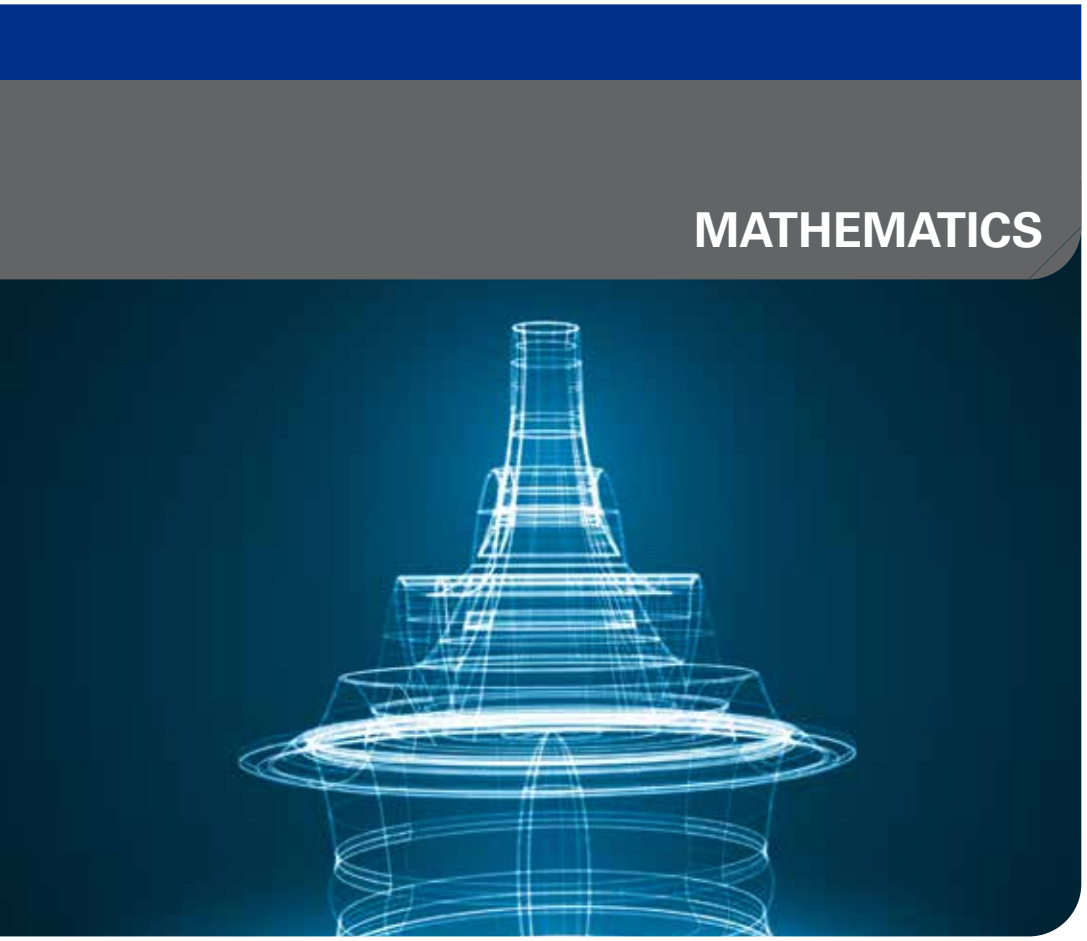
Graduate Courses: Statistics

STA 614 Advanced Statistical Methods for Business Decisions (3.0); 3 cr. This course develops an analytical approach to risk in management decisions. Topics include decision analysis; correlation and multiple regression; discriminant; judgment; canonical; cluster and factor analysis.

STA 663 Time Series Analysis (3.0); 3 cr. This course focuses on stationary models and autocorrelation function; Estimation and elimination of trend and seasonal components; Stationary processes, ARMA processes, estimation of mean, forecasting stationary time series; ARIMA models, forecasting ARIMA models, seasonal ARIMA models, applications using real and simulated data.

STA 664 Methods of Statistical Inference (3.0); 3 cr. This course focuses on functions of random variables, t-distribution, chi-square distribution, F-distribution. Stochastic convergence: convergence in probability; Convergence in distribution. Central limit theorem, properties of estimators, finding estimators, Rao-Blackwell theorem Cramer-Rao inequality, confidence interval estimation, one and two populations, hypothesis testing theory, Neyman-Pearson lemma, Bayesian methods, prior and posterior distributions, applications.

MATHEMATICS



THE DEGREE OF BACHELOR OF SCIENCE IN MATHEMATICS

The department of Mathematics and Statistics offers a program leading to the degree of Bachelor of Science in Mathematics.

Mission

The NDU mission for a Bachelor of Science in Mathematics is to provide high-quality instruction to students, to expose them to a significant range of mathematical disciplines, and to build up their reasoning and analytical skills to enable them to:

- Pursue teaching at the high school level;
- Secure employment in positions requiring analytical ability; and
- Pursue graduate study in Mathematics or related fields.

Program Educational Objectives

The main objectives of the program of the Bachelor of Science in Mathematics are to:

- Prepare students for successful professional careers in mathematics or other related areas;
- Equip students with skills relevant to the practice of mathematics, among which are independent and critical-thinking and problem-solving techniques;
- Build up the students' oral and written mathematical communication skills, which enable them to present their ideas efficiently;
- Equip students with academic and analytical skills needed to pursue higher education in mathematics or other related disciplines; and
- Promote collaborative work among students to help them function effectively in a professional workplace or in a graduate program.

Program Learning Outcomes

Upon graduation, students will be able to:

- Demonstrate proficiency in basic knowledge in a broad range of mathematical areas;
- Apply acquired mathematical concepts and techniques to analyze and solve problems;
- Read, understand and write mathematical proofs;
- Function as team players;
- Identify the interdependency of different areas of mathematics, as well as connections between mathematics and other disciplines;
- Explain and communicate mathematical principles and ideas with clarity and logic, both written and verbally, demonstrating communication skills to be used in any future career; and
- Use mathematical tools to solve larger real-world problems.

Admission Requirements

For admission requirements to the degree of BS in Mathematics, refer to the section entitled "Undergraduate Admission" of this Catalog.

Graduation Requirements
To receive the degree of BS in Mathematics, students must fulfill all requirements of the degree program, complete all required courses, accumulate a total of 90 credits with an overall grade point average (GPA) of at least 2.0/4.0 and a minimum GPA of 2.0/4.0 in both the core and major requirements, and clear all accounts with the University. Candidates for degrees are reminded that grades of "I" assigned during the last semester to courses required for graduation will result in delaying their graduation.

Degree Requirements (90 credits)

Liberal Arts Curriculum (LAC)	**27 cr.**
Core Requirements CSC 210, MAT 213, MAT 215, MAT 224, MAT 235, MAT 219, PHS 212.	**21 cr.**
Major Requirements Required major courses: 30 credits MAT 315, MAT 325, MAT 333, MAT 335, MAT 339, MAT 411, MAT 412, MAT 413, MAT 421, MAT 423. Elective major courses: 6 credits to be chosen from the following courses: MAT 305, MAT 400, MAT 460, STA 315, STA 370.	**36 cr.**
Free Electives 6 credits with the approval of the advisor.	**6 cr.**

Minor in Mathematics (15 credits)

This minor is intended primarily for students in fields of study that require strong mathematical skills, such as Engineering, Computer Science, and Physics. Depending on the choice of courses, the student can, for instance, enhance his or her understanding in the areas of real and complex analysis, algebra, and/or numerical analysis.

Admission Requirements
General requirements for admission to this minor are those of the University policy on Undergraduate Academic Minors. A minor in Mathematics may not include more than 2 courses (6 credits) which are counted in the student's "Major Requirements" category.

Pool of Courses and Graduation Requirements
To satisfy the requirements of a minor in mathematics, students must pass 2 courses from **Pool 1,** two courses from **Pool 2** and one course from **Pool 3.**

Pool 1 (6 credits):
MAT 213, MAT 215, MAT 235, MAT 219 and MAT 224

Pool 2 (6 credits):
MAT 325 or MAT 326, MAT 333, MAT 305, MAT 335, MAT 339, STA 370 and STA 315

Pool 3 (3 credits):
MAT 400, MAT 411, MAT 412, MAT 413, MAT 421 and MAT 423.

"D"is the passing grade for each course, and the minor should be completed with a GPA of 2.0.

Undergraduate Courses: Mathematics

MAT 101 Pre-Calculus (3.0); 3 cr. This course covers integer exponents, scientific notation, measurements, polynomials equations, factoring, rational equations; complex numbers; quadratic equations and inequalities, roots and radicals, rational exponents; radical equations. *Prerequisites:* Placement or Freshman Standing.

MAT 103 Basic Mathematics for Architects (3.0); 3 cr. This course helps students acquire skills in calculus, trigonometry and finding basic areas and volumes. The topics covered include: solving systems of linear equations, solving linear inequalities and quadratic equations; linear and quadratic graphs; finding mensuration (area and volume) of various geometric shapes with practical applications; trigonometric skills; metric relations in a triangle; polar coordinates; basic differentiation; basic indefinite and definite integration.

MAT 105 Principles of Calculus (3.0); 3 cr. This course covers coordinate systems; lines in the plane, functions and graphs, limits and continuity, differentiation, variation and concavity, maxima and minima, and graphing. Other topics covered include exponential and logarithmic functions, antiderivatives, definite and indefinite integrals. *Prerequisites:* Placement or Freshman Standing.

MAT 111 Calculus and Analytic Geometry I (3.0); 3 cr. This course covers functions and graphs, rate of change, graphing, limit and continuity as well as derivatives and differentiation rules. Applications of derivatives, maximum, minimum, the mean value theorem, L'Hôpital's rule will also be studied. *Prerequisites:* Placement or Freshman Standing.

MAT 112 Calculus and Analytic Geometry II (3.0); 3 cr. This course covers integration; applications of definite integrals; areas, volumes, length, moments. Transcendental functions, inverse functions and their derivatives, hyperbolic functions and their derivatives, and techniques of integration will also be studied. *Prerequisites:* MAT 111 or Placement.

MAT 203 Everyday Math (3.0); 3 cr. The course introduces students of diverse backgrounds to a wide range of mathematical topics. The course motivates students' interests in mathematics from a liberal arts perspective and increases their appreciations for mathematics. Each topic is explored in significant depth to foster a deeper understanding of the historical and artistic aspects of mathematics, as well as its practical applications in everyday life.

MAT 204 Mathematics for Business and Economics I (3.0); 3 cr. This course is designed to introduce topics in calculus and matrix analysis with applications to business, management, economics and social science. *Prerequisite:* Sophomore Standing.

MAT 205 Mathematics for Business and Economics II (3.0); 3 cr. Accumulation and discounting, simple and compound interest, effective and nominal interest, discount rates, forces of interest and discount, varying interest. Equations of value. Annuities immediate and due. Perpetuities. Amortization schedules and sinking funds. Introduction to bonds. *Prerequisite*: Sophomore Standing.

MAT 206 Financial Mathematics (3.0); 3 cr. The course describes fundamental concepts of financial mathematics, and how these concepts are applied to calculate the present and accumulated values of various streams of cash flows as a basis for future use in: reserving, valuation, pricing, asset/liability management, investment income, capital budgeting, and valuing contingent cash flows. *Prerequisite:* Sophomore Standing.

MAT 211 Discrete Mathematics (3.0); 3 cr. This course describes arithmetic in different bases, set theory, relations and functions, mathematical reasoning and induction, counting techniques, permutations and combinations, logic, Boolean algebra; and lattice theory. *Prerequisite:* Sophomore Standing.

MAT 213 Calculus III (3.0); 3 cr. The main purpose of the course is to study various integration techniques, convergence of improper integrals, infinite sequences and series, series convergence tests, power series, Taylor and Maclaurin series, graphs of polar curves, and areas in polar coordinates. *Prerequisites:* MAT 112 or Placement.

MAT 214 Applied Linear Algebra (3.0); 3 cr. This course is an introduction to basic ideas and techniques of Linear Algebra for sophomore students. The course covers Linear systems Matrices, Determinants, Eigen values and Eigen vectors. Each of these topics is followed by one or more applications. *Prerequisite:* Sophomore Standing.

MAT 215 Linear Algebra I (3.0); 3 cr. The course is an introductory course in linear algebra. It covers the study of systems of linear equations, matrices, determinants, vector spaces, subspaces, basis of vector spaces and subspaces, eigenvalues, eigenvectors, and diagonalization. Computer explorations using MATLAB are an integral component of the course. *Prerequisite:* Sophomore Standing.

MAT 219 Mathematical Logic and Set Theory (3.0); 3 cr. This course covers axiomatic theory of sets; the axiom of choice, prepositional logic, quantification theory, formal construction of the sets N; Z; Q; R; and C. Cardinal numbers and their arithmetic, ordinal numbers and transfinite induction. *Prerequisite:* Sophomore Standing.

MAT 224 Calculus IV (3.0); 3 cr. The course introduces students to functions of several variables and multiple integrations. Topics include: surfaces, functions of two or more variables, partial derivatives, Lagrange multipliers, double integrals using Cartesian and polar coordinates, triple integrals using Cartesian, cylindrical, and spherical coordinates, integration of vector fields, and the Green's Theorem. *Prerequisite:* MAT 213.

MAT 226 Probability and Statistics for Computer Science (3.0 cr.); 3 cr. The course is designed to introduce computer science students to the essential probability and statistics concepts needed in their field. The material covers fundamental statistical concepts, including measures of location and variability, graphical techniques, sampling methods, and data interpretation using models. It also covers concepts about basic probability, discrete and continuous random variables, and their respective distributions. Students will also learn about key sampling distributions, the central limit theorem, and the construction of confidence intervals and hypothesis testing using t-distribution and chi-square distribution. Practical applications will be demonstrated using R/RStudio software to illustrate these concepts. *Prerequisite:* MAT 213.

MAT 235 Ordinary Differential Equations (3.0); 3 cr. The course is an introduction to ordinary differential equations. Topics include: solutions of first and higher order differential equations, power series solutions, the Laplace transform with its operational properties, and systems of linear differential equations. *Prerequisite:* MAT 213.

MAT 305 Number Theory (3.0); 3 cr. This course covers foundations of arithmetic, properties of integers and prime numbers, unique factorization, congruence, Diophantine equations, theorems of Fermat, Euler, and Wilson, and quadratic reciprocity. *Prerequisite:* MAT 219.

MAT 315 Linear Algebra II (3.0); 3 cr. This course covers inner product spaces, orthonormal spaces, orthogonal matrices, change of basis, eigenvalues, orthogonal

diagonalization, and Applications. Topics also include: general linear transformations, inverse of and matrix of a linear transformation, and similarity. *Prerequisite:* MAT 215.

MAT 325 Elements of Probability (3.0); 3 cr. The course introduces the basics of probability of events, axioms of probability, conditioning and independence, random variables and expectations, moment generating functions, discrete/continuous univariate and multivariate random variables, the distribution of order statistics, linear combination of independent random variables and the Central Limit Theorem, along with associated applications. *Corequisite:* MAT 224.

MAT 326 Probability and Statistics for Engineers (3.0); 3 cr. This course covers concepts of probability, random variables, mathematical expectation, variance, confidence intervals. it also includes: estimation, testing of statistical hypotheses, regression and correlation, and analysis of variance. *Corequisite:* MAT 224.

MAT 333 Complex Variables (3.0); 3 cr. This course covers analytic functions, derivatives, Cauchy-Riemann equations, complex integration, Cauchy integral theorem, power series, Laurent series, residue theorem, conformal mapping, and Cauchy-Christofe ll transformation. *Prerequisite:* MAT 224.

MAT 335 Partial Differential Equations (3.0); 3 cr. This course covers second order linear partial differential equations - heat, wave and Laplace's equations; Fourier series; separation of variables; Fourier Integral; Fourier and Laplace transforms; Dirichlet and Neumann problems for different domains; first order equations; characteristic method; systems of equations. *Prerequisites:* MAT 224, MAT 235.

MAT 336 Numerical Methods for Finance (3.0); 3 cr. This course covers the basics of financial theory, basics of numerical analysis, numerical integration, deterministic and Monte-Carlo methods, and finite difference methods for partial differential equations. *Prerequisite:* MAT 204.

MAT 339 Numerical Analysis (3.0); 3 cr. The course introduces the theory and applications of numerical approximation techniques. Topics include: roots for non-linear equations, error analysis, Lagrange polynomial interpolation, Newton's divided differences for approximation of functions, numerical differentiation and integration and least squares approximation. Computational experiments in a programming language are an integral component of the course. *Prerequisites:* MAT 213 and ENG 202 or CSC 212 or CSC 210 or CSC 215.

MAT 400 Elementary Differential Geometry (3.0); 3 cr. The main purpose of this course is the study of curves and surfaces in three-dimensional Euclidean space: Tangent space, vector fields, Gauss map, geodesics, curvature, minimal surfaces, the Gauss-Bonnet Theorem, and an introduction to smooth manifolds. *Prerequisite:* MAT 224.

MAT 411 Algebra I (3.0); 3 cr. This course focuses on groups such as: permutation groups, finite abelian groups, and the Sylow theorems and their applications. *Prerequisite:* Senior Standing.

MAT 412 Topology I (3.0); 3 cr. This course covers review of set theory and logic, metric spaces, topological spaces, connectedness and compactness. *Prerequisite:* Senior Standing.

MAT 413 Advanced Calculus I (3.0); 3 cr. This course includes the topological properties of the real number system, uniform continuity, Weierstrass approximation theorem, Riemann-Steiltjes integral, uniform convergence, improper integrals with a parameter, and the Beta and Gamma functions. *Corequisite:* Senior Standing.

MAT 421 Algebra II (3.0); 3 cr. This course focuses on rings such as: ideals; quotient rings, Euclidean rings, polynomial rings, field extensions, automorphism of fields, separable and normal extensions, finite fields, and Galois theory. *Prerequisites:* MAT 411 and Senior Standing.

MAT 423 Advanced Calculus II (3.0); 3 cr. This course covers Jacobian's of transformations, functional dependence, transformations of multiple integrals, extremal problems of functions of several variables, integrals over curves and surfaces, differential forms, independence of path, and exact differential forms. *Prerequisite:* MAT 413.

MAT 460 Special Topics in Mathematics (3.0); 3 cr. Students will study selected contemporary topics in Mathematics. *Prerequisite:* Specified when Offered.

GRADUATE PROGRAMS

The Department of Mathematics and Statistics offers (i) a Master of Science in Mathematics, (ii) a Master of Science in Financial Mathematics, and (iii) a Master of Science in Actuarial Sciences.

THE DEGREE OF MASTER OF SCIENCE IN MATHEMATICS

The purpose of the MS program in Mathematics is to prepare students for continued advanced study of mathematics, college teaching, or certain jobs requiring an in-depth understanding of mathematics.

Mission

The NDU mission for a Master of Science in Mathematics is to provide high-quality instruction to students, to expose them to a significant range of advanced mathematical disciplines, and to build up their reasoning and analytical skills in order to enable them to:

- Pursue teaching at the high school or college level;
- Secure employment in positions that require analytical ability;
- Achieve the experience necessary to do research in Mathematics; and
- Pursue Ph.D. programs in Mathematics or related fields.

Program Educational Objectives

The main objectives of the program of the Master of Science in Mathematics are to:

- Prepare students for successful professional careers in mathematics or other related areas;
- Equip students with skills relevant to the practice of advanced mathematics, among which are independent and critical-thinking and problem-solving techniques;
- Build up the students' oral and written mathematical communication skills which enable them to present their ideas efficiently;
- Equip students with academic and analytical skills needed to pursue Ph.D. programs in mathematics or other related disciplines; and
- Promote collaborative work among students to help them function effectively in a professional workplace or in a graduate program.

Program Learning Outcomes

The Master of Science in Mathematics at NDU aims to prepare scientists and professionals to master a deep knowledge of the theoretical principles that form the basis of mathematical sciences specifically:

- A theoretical and practical knowledge of advanced general concepts, of the inductive method of logical-deductive reasoning, and of principles and techniques of fundamentals of mathematics;
- The ability to write mathematics well, consistent with the written tradition of the discipline. Also, they will be able to communicate mathematical ideas effectively by completing a thesis;
- In-depth knowledge of fundamental concepts of mathematics as applied to science and other areas of mathematics and to interconnect the role of pure and applied mathematics;
- The ability to reason mathematically by constructing mathematical significant proofs and careful arguments. Also, Students will be able to work with large autonomy, make conjectures, solve problems, and test the accuracy of their work; and
- An overview of the area of scientific research and development concerned and in-depth knowledge of at least one area in the field of fundamental mathematics so that the international research literature can be understood.

Admission Requirements

In addition to the University graduate admission requirements, students holding a BS in Mathematics with a cumulative GPA of at least 3.0 or the equivalent will be accepted, while those with a cumulative GPA of 2.7-2.99 or the equivalent will be conditionally accepted. Students conditionally accepted can take up to 6 credits (two 3 credit courses) during the first semester, and the conditional acceptance will be removed when the student receives a minimum of a "B" grade on each 3-credit course, taken during his or her first semester.
Students can be accepted with some Mathematics undergraduate remedial courses. Students must achieve an average passing grade of 2.7/4.0 ("B-") across the remedial undergraduate courses. These supplementary credits do not count towards the 33 credits required for the MS degree.
A maximum of 9 transfer credits from previous graduate work completed at another accredited institution of higher education may be transferred upon the discretion of the Faculty Graduate Committee.

Graduation Requirements

To satisfy the requirements for the degree of Master of Science in Mathematics, the student must complete a total of 33 credits with a cumulative GPA of at least 3.0/4.0 with no more than 2 "Cs." The minimum passing grade of a graduate mathematics course is "C."

Degree Requirements (33 credits)

Core and Major Requirements (18 credits):

MAT 621	Algebra I	3 cr.
MAT 623	Real Analysis	3 cr.
MAT 625	General Topology	3 cr.
MAT 634	Complex Analysis	3 cr.
MAT 664	Functional Analysis	3 cr.
MAT 665	Advanced Linear Algebra	3 cr.

Elective Requirements (9 credits from the following pool):

MAT 632	Algebra II	3 cr.
MAT 641	Theory of Ordinary Differential Equations	3 cr.
MAT 642	Theory of Partial Differential Equations	3 cr.
MAT 645	Theory of Integral Equations	3 cr.
MAT 661	Computational Mathematics I	3 cr.
MAT 671	Differential Geometry	3 cr.
MAT 675	Special Functions	3 cr.
MAT 683	Directed Reading	3 cr.
MAT 685	Selected Topics in Mathematics	3 cr.

Thesis Requirements (6 credits):

MAT 691	Master Thesis in Mathematics I	3 cr.
MAT 692	Master Thesis in Mathematics II	3 cr.

Graduate Courses: Mathematics

MAT 621 Algebra I (3.0); 3 cr. The course covers the following topics: free Abelian groups, finitely generated Abelian groups, the action of a group on a set, the Sylow theorems, nilpotent and solvable groups, as well as: Rings and localization, and polynomial rings and factorization. *Prerequisite:* Graduate Standing.

MAT 623 Real Analysis (3.0); 3 cr. The course covers the following topics: measure spaces, Borel and Lebesgue measure, abstract integration and differentiation, integration on product spaces, functions of bounded variations, and L ^p spaces. *Prerequisite:* Graduate Standing.

MAT 625 General Topology (3.0); 3 cr. The course covers the following topics: topological spaces, the metric topology, connected spaces, compact spaces Homotopy of paths, the Fundamental groups, Cospaces, and essential and inessential maps. *Prerequisite:* Graduate Standing.

MAT 632 Algebra II (3.0); 3 cr. Basic properties of rings will be discussed in this course such as: ideals and quotient rings, Ring Homeomorphisms, polynomial rings, left and right modules, free modules, direct sums of modules, finitely generated modules over a p.i.d, Artinian and Noetherian modules, completely reducible modules, Tensor product of modules, Bimodules, Algebras and coalgebras, projective and injective modules, primitive and semi-primitive rings, and the radical of a ring. *Prerequisite:* MAT 621.

MAT 634 Complex Analysis (3.0); 3 cr. The course covers power series representation including conformal mappings, zeros of holomorphic functions, analytic continuation, normal families, and HP spaces. *Prerequisite:* MAT 623.

MAT 641 Theory of Ordinary Differential Equations (3.0); 3 cr. The course covers existence and uniqueness theorems, linear systems with constant coefficients, matrix analysis and matrix exponential, sility, periodic coefficients, Two-Dimensional Autonomous linear and nonlinear systems, phase plane analysis, Liapunov stability, limit cycles and the Poincare'-Bendixson Theorem, and stability of linear non-autonomous systems. *Prerequisite:* Graduate Standing.

MAT 642 Theory of Partial Differential Equations (3.0); 3 cr. The course covers the following topics: single First-Order equation, the Cauchy problem, systems of first-order equations, characteristics, the Cauchy-Kowalevski Existence and Uniqueness Theorem, elliptic equations, the Laplace equation, the Lagrange-Green identity, the maximum principle, harmonic and subharmonic functions, Green's function and the Poisson formula, hyperbolic equations in higher dimensions, the wave equation, the method of Spherical means, Hadamard's method of descent, hyperbolic equations with constant coefficients, solution by the n-dimensional Fourier Transform, Parabolic equations, and the Heat equation. *Prerequisite:* Graduate Standing.

MAT 645 Theory of Integral Equations (3.0); 3 cr. The course covers an introduction to the theory of linear and nonlinear integral equations, solutions of Volterra and the Fredholm equations of the first and second kind, Fredholm's alternative theorem, Orthonormal eigensystems of a symmetric Fredholm operator, and the Hilbert-Schmidt expansion theorem and its applications to Sturm-Liouville problems. *Prerequisite:* MAT 641.

MAT 661 Computational Mathematics I (3.0); 3 cr. The course covers Matrix norm, residual vector, condition number, perturbation analysis, operations count, sparse matrices, LU-decomposition diagonally dominant matrices, iterative techniques for linear systems, and eigenvalues and eigenvectors. *Prerequisite:* Graduate Standing.

MAT 664 Functional Analysis (3.0); 3 cr. The course covers Spaces and operators including: metric spaces, normed and Banach spaces, linear operators, inner product, Hilbert spaces. It also covers fundamental theorems such as Hahn-Banach theorem, uniform boundedness theorem, open mapping theorem, closed graph theorem, and spectral theory including basic concepts, operators on normed spaces, compact operators, and self-adjoint operators. *Prerequisite:* MAT 623.

MAT 665 Advanced Linear Algebra (3.0); 3 cr. The course covers spectral decomposition, simultaneously diagonalizable matrices, generalized eigenvectors, triangulization, and Jordan canonical forms.

MAT 670 Measure and Probability (3.0); 3 cr. The course introduces the student to the basic of measure theory, Lebesgue integration, probability spaces, random variables, sequences of random variables, almost sure convergence, weak convergence, conditioning on a sigma-field, martingales and martingales inequalities, and limiting distributions of random variables.

MAT 671 Differential Geometry (3.0); 3 cr. The course covers smooth manifolds, smooth maps, the inverse function theorem, vector fields on manifold, vector bundles, cotangent bundle, submersions, submanifolds, Lie groups, tensor fields on manifold, differential forms, and integration on manifolds. *Prerequisite:* Graduate Standing.

MAT 675 Special Functions (3.0); 3 cr. The course covers special functions in mathematics: Hypergeometric, Bessel, Beta, Gamma functions, Orthogonal Polynomials (Chebyshev, Hermite, Laguerre) and the like, with applications to other fields.

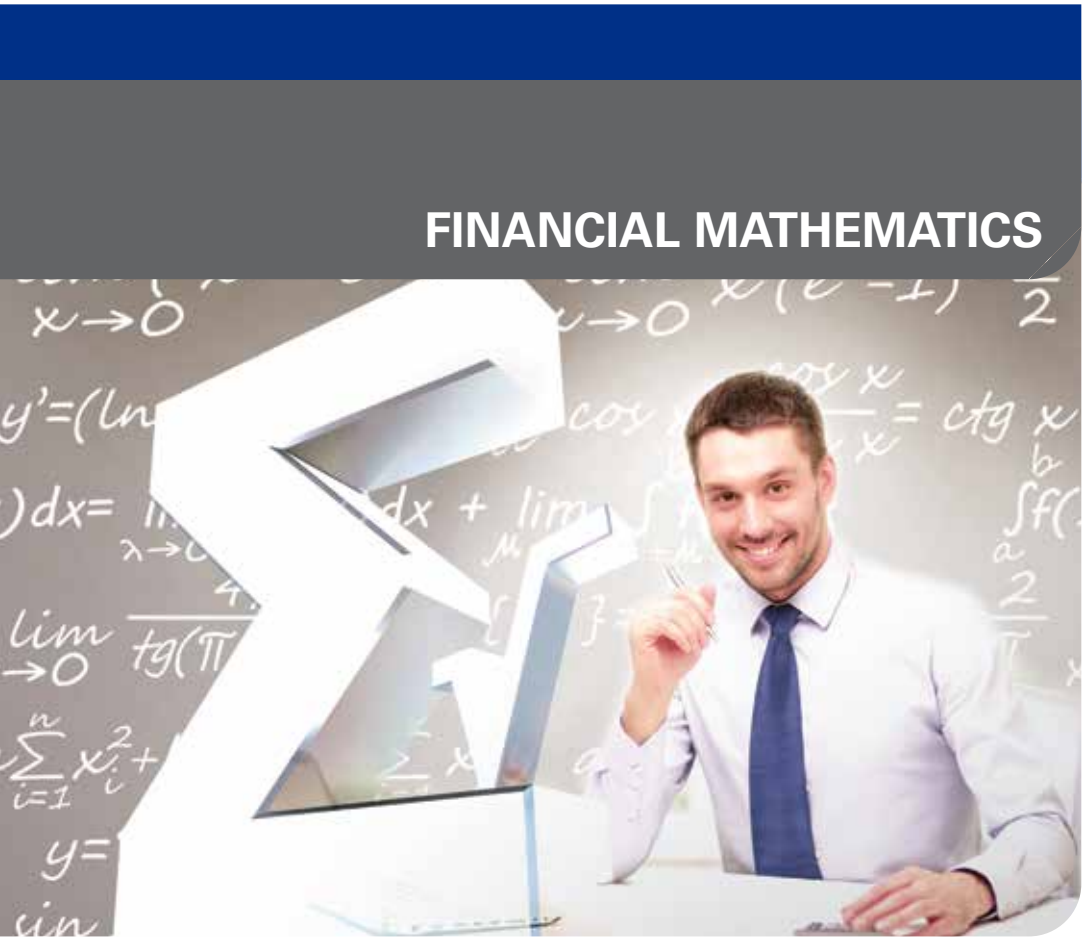
MAT 683 Directed Reading (3.0); 3 cr. A topic in mathematics of interest will be studied under the supervision of a faculty member and will be evaluated as a tutorial course.

MAT 685 Selected Topics in Mathematics (3.0); 3 cr. The course covers contemporary topics in Mathematics selected by the instructor.

MAT 691 Master Thesis in Mathematics I; 3 cr. The research for the master thesis must show the student's proficiency in approved topics in mathematics. *Prerequisite:* Advisor Consent.

MAT 692 Master Thesis in Mathematics II; 3 cr. This course is a continuation of MAT 691. *Prerequisites:* MAT 691 and Advisor Consent.

FINANCIAL MATHEMATICS



THE DEGREE OF MASTER OF SCIENCE IN FINANCIAL MATHEMATICS*

The purpose of the MS program in Financial Mathematics is to prepare students for an in-depth application of Mathematics and Probability in decision-making processes as a financial analyst or brokerage consultant.

Mission

A Master of Science in Financial Mathematics prepares students to work effectively in a spectrum of financial service industries such as investment firms, commercial banks, brokerage houses, consulting firms, and other related corporations. It also helps students to synthesize a highly technical branch of mathematics and measure theoretic probability with practical applications that affect everybody's life while emphasizing problem-solving skills that dramatically increase the graduate value to an employer and prepares students to pursue Ph.D. programs in Financial Mathematics or related fields.

Program Educational Objectives

The main objectives of the program of the Master of Science in Financial Mathematics are to:

- Prepare students for successful professional careers in Financial Mathematics or other related areas;
- Equip students with skills relevant to the practice of advanced Financial Mathematics, among which are independent and critical-thinking and problem-solving techniques;
- Build up the students' oral and written Financial Mathematical communication skills which enable them to present their ideas efficiently;
- Equip students with academic and analytical skills needed to pursue Ph.D. programs in Financial Mathematics or other related disciplines; and
- Promote collaborative work among students to help them function effectively in a professional workplace or in a graduate program.

Program Learning Outcomes

The Master of Science in Financial Mathematics aims to prepare graduate students to apply mathematical ideas to financial models, based on fundamental analytical principles. It also aims to prepare students to become financial decision-makers. Students will acquire:

- A theoretical and practical knowledge of advanced principles and techniques of stochastic and probabilistic methods in mathematics;
- In-depth knowledge of fundamental concepts of mathematics as applied to Financial Mathematics and risk analysis;
- An overview of the area of scientific research and development in Financial Mathematics, and in depth knowledge of at least one area in this field of applied mathematics, as is demonstrated through a written thesis;
- The ability to reason mathematically by constructing proofs and logical arguments. Also, students will be able to work with autonomy, make conjectures, construct financial models, solve problems, and test the accuracy of their work; and
- The ability to write and effectively communicate mathematical ideas as will also be demonstrated by the thesis.

*Not offered at the present time

Admission Requirements

In addition to the University graduate admission requirements, students holding a BS in Mathematics with a cumulative GPA of at least 3.0 or the equivalent will be accepted, while those with a cumulative GPA of 2.7-2.99 or the equivalent will be conditionally accepted. Students conditionally accepted can take up to 6 credits (two 3 credit courses) during the first semester, and the conditional acceptance will be removed when the student receives a minimum of a "B" grade on each 3-credit course, taken during his or her first semester. Students can be accepted with some Mathematics undergraduate remedial courses. Students must achieve an average passing grade of 2.7/4.0 ("B-") across the remedial undergraduate courses. These supplementary credits do not count towards the 33 credits required for the MS degree. A maximum of 9 transfer credits from previous graduate work completed at another accredited institution of higher education may be transferred upon the discretion of the Faculty Graduate Committee.

Graduation Requirements

To satisfy the requirements for the degree of Master of Science in Financial Mathematics, the student must complete a total of 33 credits with a cumulative GPA of at least 3.0/4.0 with no more than 2 "Cs." The minimum passing grade of a graduate course is "C."

Degree Requirements (33 credits)

Core and Major Requirements (18 credits):

MAT 670	Measure and Probability	3 cr.
STA 663	Time Series Analysis	3 cr.
STA 664	Methods of Statistical Inference	3 cr.
FMA 640	Advanced Financial Mathematics	3 cr.
FMA 645	Computational Financial Mathematics	3 cr.
FMA 650	Stochastic Calculus	3 cr.

Elective Requirements (9 credits from the following pool):

FIN 620	Corporate Finance and Investment Decisions	
FRM 620	Advanced Investment	
FRM 610	Derivatives	
FMA 665	Risk Theory	3 cr.
FMA 670	Optimization Methods	3 cr.
FMA 675	Discrete-Time Financial Modelling	3 cr.
FMA 677	Continuous-Time Financial Modelling	3 cr.
FMA 683	Directed Reading	3 cr.
FMA 685	Selected Topics in Financial Mathematics	3 cr.

Thesis Requirements (6 credits):

FMA 691	Master Thesis I	3 cr.
FMA 692	Master Thesis II	3 cr.

The Faculty of Natural and Applied Sciences has specific regulations and guidelines governing Master's thesis courses, the jury, oral defense procedures, grading criteria, manuscript submission, and other relevant information. When registering for Master's thesis courses, each graduate student will receive detailed information about these regulations and guidelines.

Graduate Courses: Financial Mathematics

FMA 640 Advanced Financial Mathematics (3.0); 3 cr. The course covers one-period models, multi-period models, risk-neutral pricing of derivative securities, Brownian motion, Ito's formula and SDE's, asset models, arbitrage and hedging, interest rate models, and actuarial applications. *Prerequisite:* MAT 670.

FMA 645 Computational Financial Mathematics (3.0); 3 cr. The course includes symbolic and numerical solutions of ODE's, solving Black-Scholes PDE symbolically, generalized Black-Scholes formulas, implied volatility, obstacle problems, steady state obstacle problems, fast numerical solutions of obstacle problems for Dupire PDE, Optimal portfolio rules, and optimal portfolio hedging under general asset price dynamics. *Prerequisite:* FMA 640.

FMA 650 Stochastic Calculus (3.0); 3 cr. This course is based on a review of probability and random variables, conditional expectation, martingales in discrete time, stopping times, Optional stopping time theorem, stochastic processes in continuous time, Brownian motion, Ito stochastic integral, stochastic differential and Ito formula, and stochastic differential equations (SDE's). *Corequisite:* MAT 670.

FMA 665 Risk Theory (3.0); 3 cr. This course covers convolutions, risk models, martingales, point processes, fixed-time ruin probability, finite- and infinite-time ruin probabilities, and discrete risk models. *Corequisite:* MAT 670.

FMA 670 Optimization Methods (3.0); 3 cr. This course covers general optimization problems, compactness, convexity, convex hulls, probability distribution spaces, moment spaces, linear programs, integral optimization, moment problems by dual method, loaded premium problems, and ruin problems. *Prerequisite:* MAT 670.

FMA 675 Discrete-Time Financial Modelling (3.0); 3 cr. This course introduces the most common financial contracts that are traded on exchanges between the financial institutions and their clients. It discusses Arbitrage pricing within the framework on one period model, as well as valuation and hedging of European and American options, the Cox-Ross-Rubinstein Model, arbitrage free discrete time models of spot and futures markets, and fundamental theorems of asset pricing for a finite model of security market. *Prerequisites:* MAT 670, FMA 640.

FMA 677 Continuous-Time Financial Modelling (3.0); 3 cr. This course discusses the continuous time modelling under deterministic interest rates Black-Scholes model and its variants, continuously rebalanced portfolio and the existence and uniqueness of a martingale probability measure. It also includes the study of volatility such as historical, implied, risk-neutral marginal distributions and local volatility models as well as call and put options, rational exercise time, early exercise premium and optimal exercise boundaries, Cross currency derivatives, and currency forward contracts and options and options on a foreign stock. *Prerequisites:* MAT 670, FMA 640.

FMA 683 Directed Reading (3.0); 3 cr. A topic of interest in financial mathematics will be studied under the supervision of a faculty member - Evaluated as tutorial.

FMA 685 Selected Topics in Financial Mathematics (3.0); 3 cr. The content of this course is to be arranged by the faculty member in charge of giving it. *Prerequisite:* FMA 640.

FMA 691 Master Thesis I (3.0); 3 cr. The research for the master thesis must demonstrate the student's proficiency in financial mathematics. *Prerequisite:* Advisor consent.

FMA 692 Master Thesis II (3.0); 3 cr. This course is a continuation of FMA 691. *Prerequisite:* MAT 691.

ACTUARIAL SCIENCES

MASTER DEGREE

THE DEGREE OF MASTER OF SCIENCE IN ACTUARIAL SCIENCES

The purpose of the MS degree in Actuarial Sciences is to prepare students to become credentialed risk analysts who can work in either conventional actuarial disciplines such as insurance/reinsurance, actuarial consultancies or financial institutions or in nonconventional disciplines such as predictive analytics, enterprise risk management, etc.

Mission

A Master of Science degree in Actuarial Sciences will:

- Fulfill the growing demand in Lebanon and the Arab countries for qualified risk specialists in the fields of life insurance, casualty insurance, pension funding and valuation, credit risk, hedging and portfolio management.
- Prepare our graduates to complete all the seven exams of the SOA leading toward the ASA designation (Associate in the Society of Actuaries). Also it may enable those graduates to complete the Core Technical requirements of the Institute of Actuaries, London, UK, leading towards the FIA designation (Fellow in the Institute of Actuaries).
- Provide our graduates with the adequate theoretical background to pursue a Ph.D. degree in Actuarial Science or any related field.

Program Educational Objectives

The main objectives of the Masters of Science in Actuarial Sciences are to:

- Prepare graduates to assume leading positions in risk management.
- Equip students with the theoretical background needed to become credentialed actuaries and achieve the ASA designation with the Society of Actuaries or its equivalent with other international professional societies such as CAS, CIA or IFoA.
- Inculcate in students the moral and ethical standards extracted from the precepts governing the actuarial code of professional conduct. To make them aware of the responsibilities laid upon them by the different stakeholders that depend on their actuarial opinion.
- Equip students with the academic skills needed to pursue a Ph.D. degree in any applied mathematical discipline such as Statistics, Financial Mathematics, Actuarial Sciences, etc.
- Provide students with hands-on industry based applications and projects that bolster students' assimilation of the theoretical concepts and fosters creativity, collaboration, leadership and communication skills.

Program Learning Outcomes

The Master of Science in Actuarial Sciences aims to prepare graduate students to apply mathematics, statistics, finance and economics to model future risks (life, casualty, health, catastrophe etc.). They learn how to use their models to evaluate the frequency and severity of occurrence and how to devise methods to mitigate the risks through insurance, hedging or diversification. Students will acquire:

- A theoretical and practical application of Actuarial Mathematics to life insurance products such as single life, multiple life, single decrement, multi decrement or any combination of them. Students will become proficient in pricing, reserving and profit testing any life insurance product. The learning outcomes pertaining to life insurance align with those of the LTAM exam of the Society of Actuaries.

- A theoretical and practical coverage of Loss Models applicable to casualty and health insurance products. Students will learn how to use parametric distributions to model frequency and severity of occurrence and how to devise aggregate loss models incorporating actuarial provisions such as deductibles, ceilings and coinsurance. Students will practice with the modelling control cycle from assumption setting, to parameter estimation and calibration, to model testing and finally model selection. Students will also learn how to incorporate credibility into their analysis using Classical Credibility, Bayesian, Buhlmann, and Buhlmann-Straub methods. The learning outcomes pertaining to casualty insurance align with those of the STAM exam of the SOA.
- A theoretical and practical coverage of Ratemaking and Reserving for casualty insurance. Students will be able to calculate rates using rate manuals, aggregate exposures, premiums and losses from experience years in order to determine indicated rate changes applicable on a specified future period using Loss ratio and Loss cost methods. Students will learn how to segregate the data into homogeneous groups and adjust the rate differential for each group, estimate IBNR and IBNER and decide on needed reserves. The learning outcomes of Ratemaking and Reserving align with those of Exam 5 of the Casualty Actuarial Society.
- A theoretical and practical coverage of financial derivatives: Students will tackle the mathematical fundamentals of option valuation from risk neutral valuation in continuous time, to random walk and Brownian motion to stochastic differential equations and Ito's lemma and modelling stock prices using geometric Brownian motion. They will derive the Black-Scholes - Merton formula and learn how to apply it formula to other assets. The learning outcomes of the Financial Derivatives align with those of the second half of IFM exam of the SOA.
- The ability to write and effectively communicate actuarial and mathematical concepts to technical and non-technical audience as will be demonstrated by the thesis and the projects.
- The ability to apply the theoretical concepts acquired through course work on industry provided hands-on projects in the context of ACS 680 (Internship and Project) using computer programs such as excel, SPSS, Python or R.

Admission Requirements

In addition to the University graduate admission requirements, students holding a BS in Mathematics or Actuarial Sciences with a cumulative GPA of at least 3.0 or the equivalent will be accepted, while those with a cumulative GPA of 2.7-2.99 or the equivalent will be conditionally accepted. Students conditionally accepted can take up to 6 credits (two 3 credit courses) during the first semester, and the conditional acceptance will be removed when the student receives a minimum of a "B" grade on each 3-credit course, taken during his or her first semester.

Students can be accepted with some Mathematics and Actuarial undergraduate remedial courses. Students must achieve an average passing grade of 2.7/4.0 ("B-") across the remedial undergraduate courses. These supplementary credits do not count towards the 30 credits required for the MS degree.

A maximum of 9 transfer credits from previous graduate work completed at another accredited institution of higher education may be transferred upon the discretion of the Faculty Graduate Committee.

Graduation Requirements

To satisfy the requirements for the degree of Master of Science in Actuarial Sciences, the student must complete a total of 30 credits with a cumulative GPA of at least 3.0/4.0 with no more than 2 "Cs." The minimum passing grade of a graduate course is "C."

Degree Requirements (30 credits)

Core and Major Requirements (15 credits)

ACS	603	Actuarial Modeling	3 cr.
ACS	605	Advanced Actuarial Mathematics	3 cr.
ACS	606	Credibility Theory	3 cr.
ACS	610	Advanced Financial Mathematics	3 cr.
ACS	620	Financial Economics for Actuaries I	3 cr.

Elective Requirements (6 credits from the following pool of courses)

ACS	604	Life Insurance Mathematics	3 cr.
ACS	607	Ratemaking and Reserving for Casualty Insurance	3 cr.
ACS	621	Financial Economics for Actuaries II	3 cr.
ACS	631	Group Insurance	3 cr.
ACS	632	Enterprise Risk Management	3 cr.
ACS	635	SAS for Statistical Applications	3 cr.
FMA	665	Risk Theory	3 cr.
FMA	650	Stochastic Calculus	3 cr.
STA	663	Time Series Analysis	3 cr.
STA	664	Methods of Statistical Inference	3 cr.
MAT	670	Measure and Probability	3 cr.

Internship and Project Requirement (3 credits)

ACS	680	Internship and Project	3 cr.

Thesis Requirements (6 credits)

ACS	690	Master Thesis I	3 cr.
ACS	691	Master Thesis II	3 cr.

The Faculty of Natural and Applied Sciences has specific regulations and guidelines governing Master's thesis courses, the jury, oral defense procedures, grading criteria, manuscript submission, and other relevant information. When registering for Master's thesis courses, each graduate student will receive detailed information about these regulations and guidelines.

Graduate Courses: Actuarial Sciences

ACS 603 Actuarial Modeling (3.0); 3 cr. This course covers the following topics: severity, frequency and Aggregate models, impact of coverage provisions (deductibles, limits, coinsurance) on severity, frequency and aggregate models, risk measures (VaR, TVar), construction of Empirical Models and empirical using Kaplan Meier, Nelson Aalen and Kernel Density estimators, construction and selection of parametric models. It also studies estimation using Maximum Likelihood, Method of Moment, Percentile Matching and Bayesian estimation as well as determination of the acceptability of fitted models using Chi-Square, Kolmogrov - Smirnov, Anderson-Darling, Likelihood Ratio test and Schwarz Bayesian criterion. This course covers 60% of SOA exam C (Construction and Evaluation of Actuarial Models) and part of CT6 (Core Technical: Statistical Methods) exam of the Institute of Actuaries.

ACS 604 Life Insurance Mathematics (3.0); 3 cr. This course covers survival models (discrete and continuous), evaluation of insurance products (paid at the end of year of death or at the moment of death) such as whole life, term, deferred and endowment insurance, and evaluation of the annuities (paid at the end of each period or at the beginning of each period) such as whole life, term and deferred. It also studies determination of the pure premium for all types of products and determination of benefit reserves. This course covers the material needed for SOA exam MLC and its equivalent CT5 (Core Technical: Contingencies) exam of the Institute of Actuaries.

ACS 605 Advanced Actuarial Mathematics (3.0); 3 cr. This course covers modeling decrements used in insurance and annuities related to multiple decrements on single life models and single decrement on multi-life models. It also covers transition probabilities between different states using Markov chain models, models used to evaluate present value of benefit and premium for multiple decrement on single life and single decrement on multiple lives models, benefit reserves and premiums using a Markov chain model, and models that consider expense cash flows. This course covers SOA exam MLC (Models for Life Contingencies) and its equivalent CT5 (Core Technical: Contingencies) exam of the Institute of Actuaries. *Prerequisite:* ACS 604.

ACS 606 Credibility Theory (3.0); 3 cr. This course covers limited fluctuation (Classical) credibility, Bayesian analysis, Bühlmann and Bühlmann - Straub models and their relation to Bayesian model, conjugate priors in Bayesian analysis especially the Poisson-Gamma model, and empirical Bayesian methods in non-parametric and semi-parametric models. It also covers simulation of discrete and continuous random variables using the inversion method, estimation of the number of simulations needed to obtain an estimate with given confidence, and bootstrap method to estimate Mean Square Error (MSE) of an estimator. This course covers the remaining 40% of SOA exam C (Construction and Evaluation of Actuarial Models) and part of CT6 (Core Technical: Statistical Methods) exam of the Institute of Actuaries.

ACS 607 Ratemaking and Reserving for Casualty Insurance (3.0); 3 cr. This course covers the following topics: finding policy premium using Rate Manuals, exposure aggregation methods (written, earned or in-force exposures, calendar year, policy year or accident year accumulation, use of premiums for ratemaking (written, earned or in-force premiums, effect of law changes, rate changes, premium trend and adjustment for coverage, parallelogram method). It also covers use of loss and loss adjustment expenses for ratemaking, underwriting expense provision, overall rate level indication using the pure premium and loss ratio methods, segregation of data into homogenous groups, calculation of rate differentials for each classification, implementation of rates to achieve firm's goals, and determination of premium for policies with coinsurance. This course covers almost 50% of CAS (Casualty Actuarial Society) Exam 5 (Basic techniques for Rating and Estimating Claim Liabilities).

ACS 610 Advanced Financial Mathematics (3.0); 3 cr. This course covers cash flows and portfolios, immunization, general derivatives, options, hedging and investment strategies, forwards and futures, and swaps. This course covers the material of the financial economics part of the FM (Financial Mathematics) exam of the SOA and part of CT8 (Core Technical: Financial Economics) exam of the Institute of Actuaries.

ACS 620 Financial Economics for Actuaries I (3.0); 3 cr. ACS 620 Financial Economics for Actuaries I (3.0); 3 cr. This course covers binomial option pricing, Black-Scholes formula and option Greeks, Delta hedging to manage the risk of an option position, and exotic options (Asian, barrier, compound and exchange). This course covers the first part of the material of SOA MFE (Models for Financial Economics) exam and its equivalent CT8 (Core Technical: Financial Economics) exam of the Institute of Actuaries. *Prerequisite:* ACS 610.

ACS 621 Financial Economics for Actuaries II (3.0); 3 cr. This course covers the Lognormal Model, Monte Carlo valuation, diffusion process and Ito's Lemma, Black-Scholes partial differential equation, volatility estimation and stochastic volatility pricing models. It also studies how Black-Scholes and binomial analysis apply to bonds and interest rate derivatives. This course covers the second part of SOA MFE exam and its equivalent CT8 (Core Technical) exam of the Institute of Actuaries. *Prerequisite:* ACS 620.

ACS 631 Group Insurance (3.0); 3 cr. This course studies medical quality measures, group vs. individual product vs. government financed products in terms of underwriting and pricing, techniques used for claims and disease management, insurer claim reserving techniques (Estimating Incurred but not reported claims, IBNR), limitations of valuation methods such as lag methods, tabular methods, case reserves, projection methods and loss ratio methods, as well as test adequacy of reserves vs. actual reserves.

ACS 632 Enterprise Risk Management (3.0); 3 cr. This course aims to identify risk categories (financial, operational, insurance, strategic and systematic) and covers accounting concepts used in insurance companies, financial and non-financial institutions, risk exposure quantification through the use of risk metrics in integrated risk management. It also includes the theory and practice of extreme value theory in modeling risk, risk management through selection of appropriate risk retention level, weighing the cost and benefit of risk transfer and developing appropriate choice of hedging strategy, and enterprise risk management framework and ERM process.

ACS 635 SAS for Statistical Applications (3.0); 3 cr. This course includes an in-depth coverage of SAS computer package and its statistical applications. The topics include language of SAS, data formatting, creating and storing SAS data sets, file manipulations, macroprocedure and graphics, as well as statistical analysis in ANOVA. Regression and time series are done using large data sets to emphasize practical experience in SAS programming and reporting.

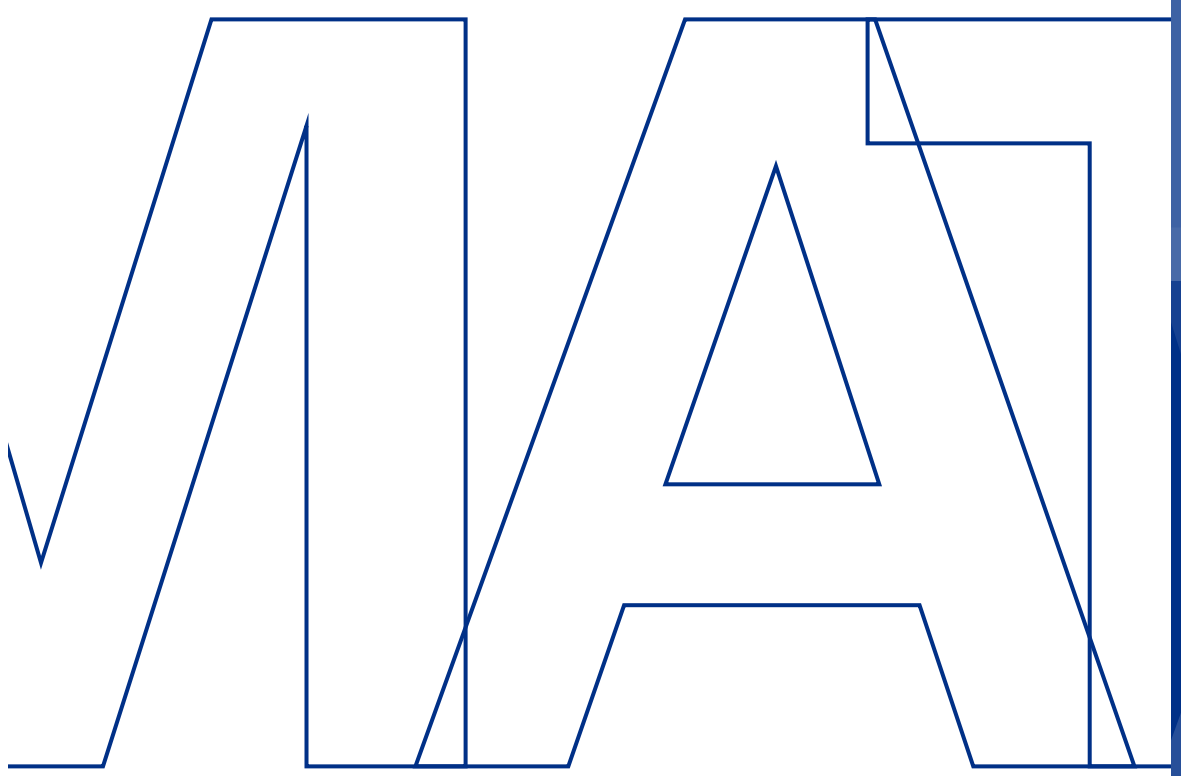
MAT 670 Measure and Probability (3.0); 3 cr. The course introduces the student to the basics of measure theory, Lebesgue integration, probability spaces, random variables, sequences of random variables, almost sure convergence, weak convergence, conditioning on a sigma-field, martingales and martingale inequalities, and limiting distributions of random variables.

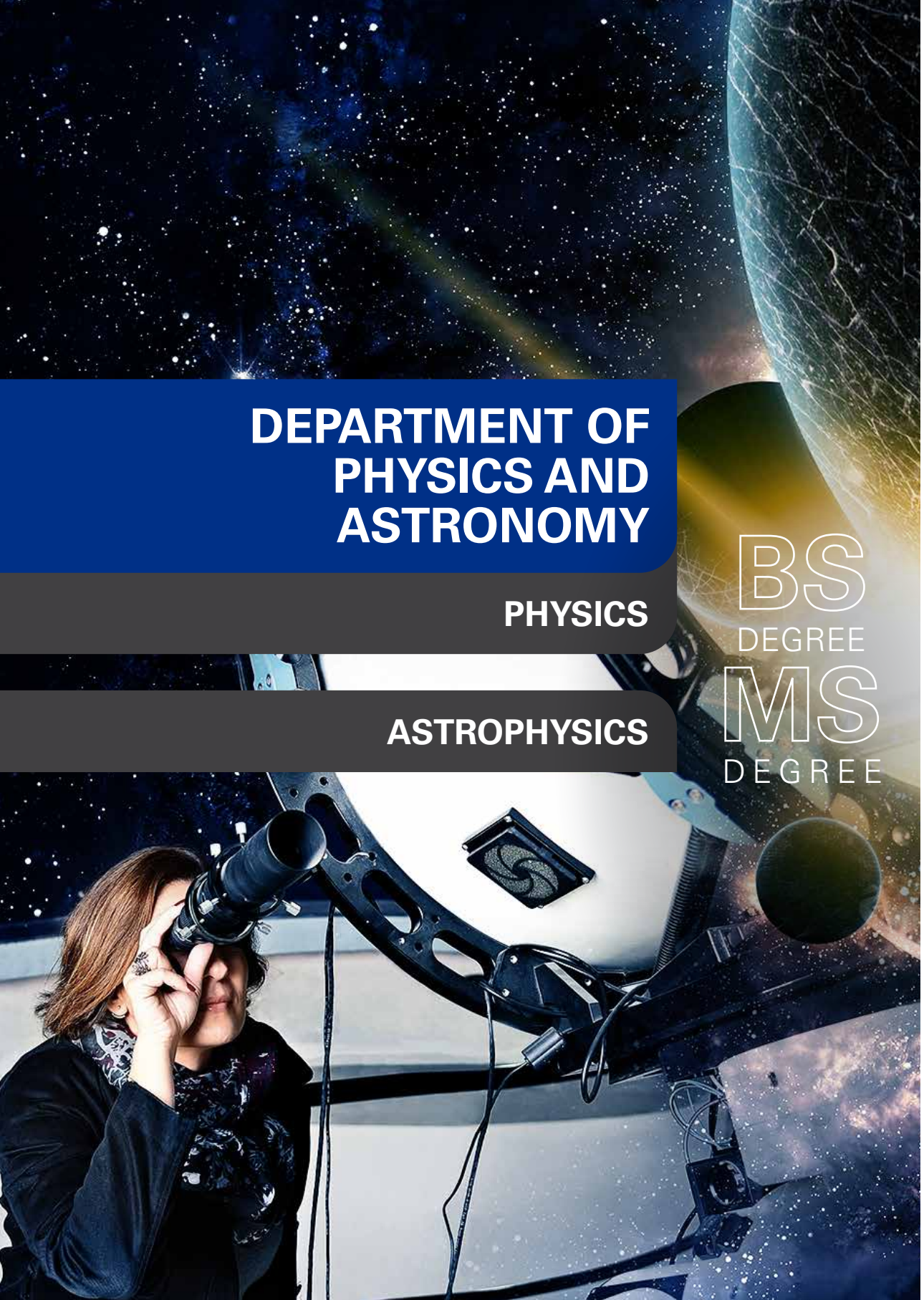
ACS 680 Internship and Project (3.0); 3 cr. This course gives the student the opportunity to gain practical experience in their field of interest. The student selects one topic from a set of actuarial applications such life insurance, pension funding, annuities among others. Dependent on the topic chosen, the student is then allocated to a firm that is

willing to host him/her for a period on one semester during which he/she will be working on a relevant project. The course is concluded by a written report presented by the student explaining the project's objectives, the analytical methodology used, the analysis and the results obtained. (All in line with the Actuarial Control Cycle: define the problem, highlight external factors, set assumptions, build model and assess and monitor adequacy of model). This course covers FAP modules 1-8 of the SOA.

ACS 690 Master Thesis I (3.0); 3 cr. The master thesis should demonstrate the student's proficiency in at least one field of the actuarial practice. *Prerequisite:* Advisor consent

ACS 691 Master Thesis II (3.0); 3 cr. This course builds on ACS 690 and concludes with a written thesis. *Prerequisite:* ACS 690.





DEPARTMENT OF PHYSICS AND ASTRONOMY

Professors: Sabra, Bassem; Zgheib, Charbel.

Senior Lab Instructors: Skaff, Nibelle (NLC); Zoghbi, Catherine.

Lab Instructors: Whaibe, Nicolas

Program of Study

The Department of Physics and Astronomy (DPA) offers the following degree programs:

- BS in Physics (95 credits)
- MS in Astrophysics (36 credits), (joint degree with USJ)*

The Department offers the following minor:

- Minor in Physics (15 credits)

The Department of Physics and Astronomy also offers a variety of undergraduate service courses in astronomy and physics. These courses are meant to serve academic programs offered by other Faculties at the University.

Mission

Consistent with the missions of NDU and its Faculty of Natural and Applied Sciences (FNAS), the Department of Physics and Astronomy (DPA) aims to give physics majors a well-rounded education that will prepare them for graduate studies and a career in research, industry, or education. The DPA is particularly committed to developing physics and astronomy in Lebanon and the Arab region through quality teaching and innovative programs in research and public outreach.

*Not offered at the present time

UNDERGRADUATE PROGRAM

THE DEGREE OF BACHELOR OF SCIENCE IN PHYSICS

Physics is the discovery of the inner workings of the natural world, from the whole universe to the smallest particles. It studies the fundamental laws of nature that govern the phenomena observed in everyday life.

Students holding a BS in Physics can pursue a career in teaching or follow graduate studies. Other options include working in hospitals as medical physicists, or in the quality control industry for running labs or devising numerical simulations.

Mission

Consistent with the missions of NDU, the FNAS, and the Department of Physics and Astronomy (DPA), the BS in Physics degree program at the DPA aims at giving physics majors a well-rounded education that will prepare them for graduate studies and a career in research, industry, or education.

Program Educational Objectives

Within three to five years after obtaining a BS in Physics from the DPA at NDU, the typical graduate will be expected to achieve one or more of the following:

- Go on to graduate studies and succeed in producing new knowledge as demonstrated in publications;
- Be a successful physics school teacher as demonstrated in promotions and/or caliber of school where he or she works; and
- Be successful in industry as demonstrated in promotions, and/or caliber of companies he or she works for.

Program Learning Outcomes

Upon graduation, students will be able to:

- Demonstrate proficiency of a given body of knowledge and skills in physics, and be well-prepared for professional careers and/or graduate study skills in physics, and be well-prepared for professional careers and/or graduate study;
- Develop and demonstrate high-level cognitive thinking skills including critical-thinking, problem-solving skills, and integrative thinking;
- Be effective communicators in their field of knowledge (write reports, present findings to peers, and explain physics to the general public); and
- Demonstrate ethical values such as integrity and responsibility for the common good.

Degree Requirements (95 credits)

Liberal Arts Curriculum (LAC) **27 cr.**

Core Requirements **29 cr.**
MAT 213, MAT 215, MAT 224, MAT 235, PHS 206, PHS 212, PHS 213, PHS 275, PHS 276, EEN 205, CSC 212.

Major Requirements **33 cr.**
PHS 301, PHS 304, PHS 351 (or MAT 335), PHS 373, PHS 374, PHS 415, PHS 417, PHS 436, PHS 480, PHS 497, AST 310.

Two courses of the following (headings are suggestions):
Astrophysics courses: AST 320, 321, 370. Students opting for two of these courses are encouraged to take the third as a free elective.

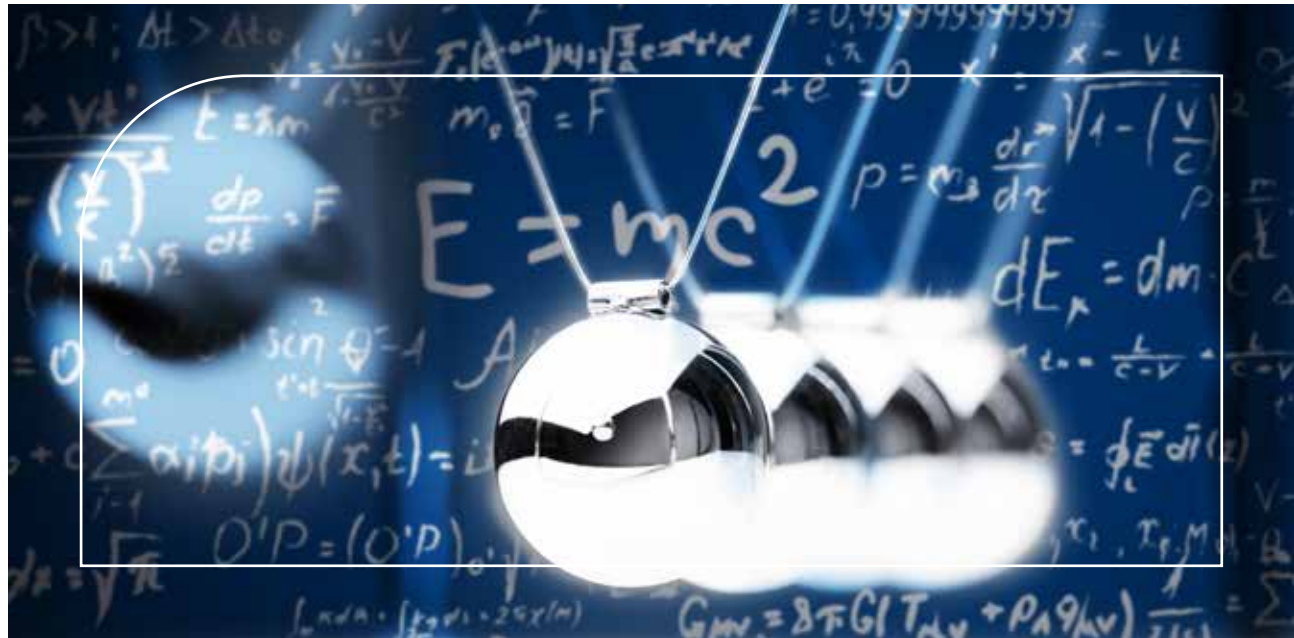
Hydrodynamics courses: MEN 320, MEN 321. Students opting for these two courses are encouraged to take MEN 550 (Computational Methods in Thermal and Fluid Mechanics) as a free elective.

Semiconductors courses: EEN 206, PHS 405. Students opting for these two courses will be encouraged to take EEN 416 (Semiconductor devices) as a free elective.

Nuclear & Particle Physics courses: PHS 315, PHS 403.

Other: PHS 460.

Free Electives **6 cr.**



Minor in Physics (15 credits)

The Minor in Physics aims to give students who are literate in mathematics a basic background enabling them to approach any applied or advanced topic in physics. It makes them eligible for graduate work in physics without the need for remedial courses or a disadvantage vis-à-vis physics majors. More specifically, the Minor in Physics will:

- Prepare students to work on advanced topics in Physics;
- Give a math major an edge when pursuing a teaching career in sciences and mathematics; and
- Give the engineer more problem-solving techniques, crucial for his or her career.

The minor proposed is aimed at scientifically minded students who already possess the necessary mathematical skills to tackle advanced physics courses. It will be most attractive for engineering and math students.

Admission Requirements
General requirements for admission to this minor are those of the University policy on "*Undergraduate Academic Minors.*" No additional requirements are needed.

Pool of Courses
PHS 213, PHS 304, PHS 415, PHS 417*, PHS 436

Graduation Requirements and Suggested Schedule
To satisfy the graduation requirements of a minor in Physics, students must pass all 5 courses from the pool of courses listed above. Students are not exempted from the prerequisites of these courses. The level of mathematics required in PHS 304 and above is MAT 335. A suggested schedule is as follows:

- First semester (1 course; 3 credits): PHS 213
- Second semester (2 courses; 6 credits): PHS 304, PHS 417
- Third semester (2 courses; 6 credits): PHS 415, PHS 436

"D" is the passing grade for each course, and the minor should be completed with a GPA of 2.0.

* EEN 330 taken at the Departments of Electrical and Computer and Communication Engineering is equivalent to PHS 417. Students from these majors may ask to replace PHS 417 with EEN 330.

Undergraduate Courses: Physics

PHS 101 General Physics I (3.0); 3 cr. This is a basic course covering: vectors, Newton's laws of motion, particle kinematics and dynamics, work, energy, linear and angular momentum, rotational motion, rigid body, equilibrium and Statistics. *Prerequisite:* Freshman Standing.

PHS 102 General Physics II (0.2); 1 cr. This is a basic course covering electric fields and electrical potential; DC-circuits; magnetic fields; capacitance and inductance; AC-circuits and electromagnetic waves. *Prerequisite:* Freshman Standing.

PHS 171 General Physics I Laboratory (0.2); 1 cr. This is a laboratory course illustrating the principles and experiments taught in General Physics I. *Corequisite:* PHS 101.

PHS 172 General Physics II Laboratory (0.2); 1 cr. This is a laboratory course illustrating the principles and experiments taught in General Physics II. *Corequisite:* PHS 102.

PHS 201 Physics for GIS (3.0); 3 cr. This is a basic course covering the physics behind geographic information systems: kinematics in 1D & 2D, Equilibrium & Non-equilibrium applications of Newton's laws of motion, gravitational force, dynamics of uniform circular motion – satellites, geometric optics, optical instruments, wave nature of light, and special relativity – physics behind GPS systems. *Prerequisite:* Sophomore Standing.

PHS 203 General Physics III (3.0); 3 cr. This course covering waves and corpuscles, sound, acoustics, reflection and refraction of light; interference and diffraction; polarization, spectrometry, and laser optics. *Prerequisite:* Sophomore Standing.

PHS 206 Heat, Vibration and Waves (3.0); 3 cr. This course is an introduction to thermodynamics: Kinetic Theory, Zeroth, First and Second Law of Thermodynamics. Vibrations: Simple Harmonic Motion, Damped and Forced Oscillators, Coupled Oscillators and Normal modes, Damped and Forced Coupled Oscillators. Waves: Mechanical waves as a chain of coupled oscillators, harmonic waves, Fourier combination of waves. *Prerequisite:* Sophomore Standing.

PHS 207 Development of Science and Technology (3.0); 3 cr. This course covers the principal periods in the development of the scientific thought. The contribution of individuals like Aristotle, Ptolemy, Copernicus, Galileo, Newton, Darwin, Mendel, and Einstein. *Prerequisite:* Sophomore Standing.

PHS 208 Physics for Life Sciences I (3.0); 3 cr. This course covers mechanics, relativity, hydrostatics, hydrodynamics, thermodynamics, and the physics of waves, with special emphasis on biological applications, *Prerequisite:* Sophomore Standing.

PHS 209 Physics for Life Sciences II (3.0); 3 cr. This course covers electricity and magnetism, modern physics: early quantum theory with emphasis on atomic and molecular applications, spectroscopy, nuclear physics, statistical mechanics, with special emphasis on biological and medical applications. *Prerequisite:* Sophomore Standing.

PHS 212 Electricity and Magnetism (3.0); 3 cr. This course focuses on electrostatics: field, potential and dielectric, DC circuits and laws, Magnetic field, Ampere's and Faraday's laws, induction, AC circuits, and Qualitative discussion of Maxwell's equations. *Corequisite:* MAT 224.

PHS 213 Modern Physics (3.0); 3 cr. This course focuses on Special Relativity,

Quantization of electricity, charge, and light, blackbody radiation. particle-wave duality as well as Bohr model of Hydrogen, Schrodinger wave equation and application to one dimensional problem, three-dimensional solution of the Hydrogen atom, and angular momentum and spin. *Corequisite:* MAT 235.

PHS 271 Electricity and Magnetism Laboratory (0.2); 1 cr. This course is based on selected experiments in electricity and magnetism. Emphasis is placed on statistical treatment of data and error estimation. *Corequisite:* PHS 212.

PHS 272 Modern Physics Laboratory (0.2); 1 cr. This course is based on selected experiments in modern physics. Emphasis is placed on statistical treatment of data and error estimation. *Corequisite:* PHS 213.

PHS 273 Experimental Physics for Mechanical Engineers (0.2); 1 cr. This course is based on selected experiments in mechanics, energy & thermodynamics, vibrations and acoustics, and electricity & magnetism. *Prerequisite*: PHS 203. *Corequisite:* PHS 212.

PHS 275 Experimental Physics I (0.2); 1 cr. This course is the first of a sequence of two sophomore physics labs. It includes selected experiments in classical mechanics, electricity and magnetism, and modern physics such as collisions, vibrations and waves, electric and magnetic field measurements, emission line spectroscopy, etc. Students learn about error analysis, software packages for data visualization and data analysis such as Excel, Matlab, and lab report writing. *Corequisite:* PHS 206.

PHS 276 Experimental Physics II (0.2); 1 cr. This course is a continuation of PHS 275 with additional experiments and topics. *Prerequisite:* PHS 275.

PHS 278 Physics for Life Sciences I Lab (0.2); 1 cr. This lab course accompanies PHS 208. It includes experiments are performed in Mechanics, Hydrodynamics, Heat transfer and Waves. *Corequisite:* PHS 208.

PHY 279 Physics for Life Sciences II Lab (0.2); 1 cr. This Lab course accompanies PHS 209. It includes experiments in Electricity and Magnetism: Hall Effect, Circuits, Helmholtz Coil, and Modern Physics: Blackbody Radiation, Spectroscopy, etc. *Corequisite:* PHS 209.

PHS 301 Optics (3.0); 3 cr. This course covers the following topics: wave optics and properties of light including interference, Fraunhofer and Fresnel diffraction, polarization and double refraction. It is also an introduction to lasers and holography. *Prerequisites:* PHS 206, PHS 212.

PHS 304 Classical Mechanics (3.0); 3 cr. This course focuses on particle kinematics and dynamics, central force problem, motion in non-inertial frames of reference, kinematics and dynamics of rigid bodies, Lagrangian mechanics, small oscillations, and relativistic momentum and energy. *Corequisite:* MAT 235.

PHS 315 Nuclear Physics (3.0); 3 cr. This course covers general nuclear properties, radioactivity, nucleon-nucleon interaction, scattering, nuclear models, and nuclear reactions. *Prerequisite:* PHS 213.

PHS 351 Mathematical Methods for Physics (3.0); 3 cr. This course covers the following topics: partial differential equations, Fourier series and transforms, wavelets, special functions, orthogonal functions, Greene's function, and integral equations. *Prerequisites:* MAT 215, MAT 224, MAT 235.

PHS 373 Experimental Physics III (0.2); 1 cr. This course is the first of a sequence of two junior physics labs with more advanced experiments that may include forced oscillations and resonance, the Hall effect, diffraction, Zeeman effect, etc. Emphasis will continue on data and error analysis and report writing. *Prerequisite:* Junior Standing.

PHS 374 Experimental Physics IV (0.2); 1 cr. This course is the second of a sequence of two junior physics labs with more advanced experiments that will include long experiments on measurements of fundamental constants and other advanced topics. This lab will serve as a preparation for the Senior Project. *Prerequisite:* PHS 373.

PHS 403 Elementary Particle Physics (3.0); 3 cr. The aim of this course is to survey elementary particles: leptons, hadrons, and quarks. It also includes invariance principles and conservation laws, detectors and accelerators, and phenomenological study of interactions. *Prerequisite:* PHS 436.

PHS 405 Solid State Physics (3.0); 3 cr. Topics in this course include crystal structure, the band theory, the free-electron and Fermi-Dirac theory, and the physical properties of semiconductors and metals. *Prerequisite:* PHS 415.

PHS 415 Thermal and Statistical Physics (3.0); 3 cr. Topics include: entropy and probability, energy and temperature, the three laws of thermodynamics, Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics, equation of state for simple systems, and elementary theory of phase transitions. *Prerequisite:* Senior Standing.

PHS 417 Electromagnetic Theory (3.0); 3 cr. This course covers Maxwell equations with applications to physical problems. Topics include: electrostatics, magnetostatics, Laplace and Poisson equations, dielectric and magnetic materials, electromagnetic waves and radiation, and special theory of relativity. *Prerequisites:* PHS 212, PHS 351 or MAT 335.

PHS 436 Quantum Physics (3.0); 3 cr. This course focuses on "Modern" quantum Physics, Hilbert space, Operators, eigenvalues and eigenfunctions, matrix formulation of quantum mechanics, angular momentum, time evolution, two spin-1/2 systems, harmonic oscillator, the real hydrogen atom, time-independent and time dependent perturbation theories. *Prerequisites:* PHS 213, PHS 304.

PHS 460 Selected Topics in Physics (3.0); 3 cr. This course includes advanced topics selected from the different disciplines of physics. *Prerequisite:* Senior Standing.

PHS 480 Physics Internship (1.0); 1 cr. This course offers the Physics undergraduate students the opportunity of an early exposure to the professional market that will allow them to gain some early insight into professional practice in Physics education, or some knowledge about real-world Physics topics explored in research or industry. *Prerequisite:* Senior Standing.

PHS 497 Senior Project; 3 cr. This course is based on a project chosen by the student in consultation with the instructor. The project could be in one of the different fields of physics (research-based), in physics education, or industry-related. The course grade will be on a written thesis and a presentation. *Prerequisite:* Senior Standing and consent of the instructor.

Undergraduate Courses Astronomy

AST 101 - Introduction to the Solar System and Exoplanets (3.0); 3 cr. The course gives an up-to-date description of the solar system: the eight planets, Kuiper Belt Objects, asteroids and comets. The latest discoveries in planetary science will be seamlessly woven into the course. The course also covers the search for exoplanets and what they tell us about planetary systems in the Universe. It also discusses the topic of life in the Universe.

AST 201 Discovering Astronomy (3.0); 3 cr. This course is a non-calculus based introduction to astronomy. It explores the wonders of the universe using observations from space and from the ground. It covers the solar system, stars and their evolution (black holes, white dwarfs…), galaxies and cosmology (the Big-Bang…). The course will include an observing night to discover the night sky, readings, and some elementary observations. Not open to physics students.

AST 301 Geodesy (3.0); 3 cr. The course will cover coordinate systems, ellipsoids, data, coordinate transformations, geodetic and Cartesian coordinate systems, heights and leveling, map projections and two-coordinate systems, and the use of Astronomical objects to improve the accuracy of geodetic measurements. *Prerequisites:* MAT 224 or MAT 225.

AST 310 Fundamentals of Astrophysics (3.0); 3 cr. This introductory astrophysics course is designed for students majoring in physics. Topics include: introduction to the night sky, coordinate systems, properties of atoms and light, magnitudes, and telescope types, Kepler's laws and dynamics, stellar astrophysics, planetary systems, galaxies, and cosmology. *Prerequisite:* PHS 213.

AST 320 Astrophysics I: Stars (3.0); 3 cr. This course will specifically concentrate on stellar astrophysics. The course will discuss stellar structure and nuclear astrophysics, stellar atmospheres and radiative transfer, star formation processes, and evolution of stars beyond the main sequence (pulsations, AGBs, white dwarfs, neutron stars, supernovae). *Prerequisite:* AST 310.

AST 321 Astrophysics II: Galaxies (3.0); 3 cr. This course deals with the nature and properties of galaxies and provides an introduction to cosmology. The course will cover the Milky Way, and properties of spiral, elliptical, and irregular galaxies. The course will also cover the basic elements of cosmology and the birth and evolution of the Universe as a whole. *Prerequisite:* AST 310.

AST 370 Observational Astronomy (0.9); 3 cr. This course is an introduction to the major observational techniques used in astrophysics and their corresponding instrumentation, based on practical observational projects. This course will also include a discussion of telescope optics. *Prerequisite:* AST 310.

ASTROPHYSICS

GRADUATE PROGRAM

The graduate program in Astrophysics is a joint degree program with Université Saint-Joseph de Beyrouth (USJ). The program follows only the Thesis Option and is designed to prepare students for doctoral studies in Astrophysics, allow students to acquire, through research, the competencies requested by the job market, and to graduate competent physicists who are capable of integrating astronomy and astrophysics within the physics curricula in schools.

THE DEGREE OF MASTER OF SCIENCE IN ASTROPHYSICS*

Mission

Consistent with the missions of NDU, its FNAS, and its Department of Physics and Astronomy (DPA), the MS in Astrophysics degree program at the DPA aims to give its graduate student a solid education in observational astrophysics that will prepare them for Ph.D. studies and a leading career in research, industry, or education.

Program Educational Objectives

Within three to five years after obtaining an MS in Astrophysics from the Department of Physics & Astronomy at NDU, the typical graduate will be expected to achieve one or more of the following:

- Go on to Ph.D. studies and succeed in producing new knowledge as demonstrated in publications;
- Become a successful physics school teacher as demonstrated in promotions and/or caliber of school where he or she works;
- Become a successful educator (management/administration); and
- Become successful the industry as demonstrated in promotions, leadership, and/or caliber of companies he or she works for.

Program Learning Outcomes

Upon graduation, students will be able to:

- Demonstrate mastery of a given body of knowledge and skills in astrophysics, and be well-prepared for professional careers and/or Ph.D. work;
- Develop and articulate new questions in his or her field;
- Present and publish research findings in professional venues; and
- Demonstrate acknowledged ethical values in his/her field of research.

Admission Requirements

Admission rests on the study of the candidate's file followed by an interview with a joint committee from both Faculties of Sciences composed of the two deans, the two Department chairs concerned, the Master's Program supervisors, and instructors delegated by the two Faculties. To be eligible for admission, students shall satisfy the following criteria:

- They shall have a minimum GPA of 2.7/4.0 according to the American grading system applied at NDU, or a minimum weighted mean point average of 60/100 according to the system applied at USJ; and
- They shall be able to follow lectures in both English and French.

*Not offered at the present time

Graduation Requirements

To satisfy the requirements for the degree of MS in Astrophysics, the student must complete 36 credits, including 9 credits of thesis work. The minimum passing grade is "C." The overall cumulative GPA should be at least 3.0/4.0 with no more than 2 "Cs." The thesis is based on original research conducted by the student.

Degree Requirements (Thesis Option) (36 credits)

1- Complete the following five required courses at NDU **15 cr.**
AST 601, AST 602, AST 603, AST 604, AST 670.

2- Complete one of the following courses at USJ **2 cr.**
AST 612, AST 613, AST 614, AST 620, AST 621, AST 622, AST 623.

3- Complete the following courses at USJ **9 cr.**
AST 623; Physique atomique et moléculaire; Traitement et Analyse des données; Physique quantique avancée; Préparation à la vie professionnelle; Entrepreneurship; Informatique pour Data Scientist.

4 - Complete one of the following courses at USJ **1 cr.**
Acquisition, conditionnement et traitement des signaux; Physique nucléaire.

5- Complete the MS thesis requirements at NDU **9 cr.**

Graduate Courses: Astrophysics

AST 601 Stellar Astrophysics (3.0); 3 cr. This course covers stellar parameters and classification, structure and evolution, energy production and transport in stellar interiors, compact objects, and binary systems.

AST 602 Radiative Processes (3.0); 3 cr. This course will cover the following topics: photoionization, line formation and broadening, LTE and non-LTE radiation transfer, Polarization processes, non-thermal processes (synchrotron, Compton…), and application to different regions and regimes (HII, AGNs, Atmospheres, CS shells…).

AST 603 Astrophysics of Galaxies (3.0); 3 cr. This course focuses on the anatomy of the Milky Way: disk, bulge, globular clusters, ISM, rotation curve, spiral structure, as well as, Hubble tuning fork, spirals, ellipticals, irregulars, formation and evolution, and active galaxies. *Prerequisite:* AST 601.

AST 604 Instruments and Techniques in Astrophysics (3.0); 3 cr. This course covers software and numerical methods in astronomy, telescope optics, aberrations and characterization. The various designs that will be studied include: Newtonian, Cassegrain, Schmidt, Ritchey-Chretien, etc; and the optics of instrumentation will be: spectrograph, polarimeter, spectropolarimeter, etc; elements of optical design and instrumentation.

AST 670 Observational Astrophysics (1.6); 3 cr. This course covers magnitudes & photometric systems, coordinates and time, telescope optics; CCD observation & reduction techniques, spectroscopy, and polarimetry.

AST 690 thesis (9.0); 9 cr. This course is based on the research project and thesis.

AST

Graduate Courses at USJ

AST 612 Interstellar Medium (2.0); 2 cr. This course covers: Interstellar Medium (ISM) in the Milky Way, HII regions, photoionisation equilibrium in the ISM, Interstellar Dust, ISM distribution and phases, and absorption and emission in the ISM… *Prerequisite:* AST 602.

AST 613 Active Galaxies (2.0); 2 cr. This course is based on a historical overview of the discovery of active galaxies and the enigma of the power source and its nature. It also covers the black hole paradigm, accretion physics, AGN types, emission processes in AGNs, and unification models. *Prerequisite:* AST 602. *Corequisite:* AST 603.

AST 614 Site Evaluation and Atmospheric Optics (2.0); 2 cr. This course covers effects of the atmosphere on astronomical observations, seeing, opacity, turbulence, and measurement techniques of the different parameters of interest to Astronomy.

AST 620 Variable Phenomena in Astrophysics (2.0); 2 cr. This course discusses photometric and spectroscopic variability of individual stars binaries and variable phenomena, long term variability of AGNs, blazars, and BL Lac, and other variable and transient phenomena such as supernovae. *Prerequisites:* AST 601, AST 603, AST 613.

AST 621 Nuclear Astrophysics (2.0); 2 cr. This course covers elements in the universe, stellar and primordial nucleosynthesis, hydrogen burning sequences, r and s processes, post hydrogen-burning reactions, and neutron stars. *Prerequisite:* AST 601.

AST 622 Circumstellar Environments (2.0); 2 cr. This course is based on the study of the material surrounding stars at their different phases of evolution, disks and outflows in pre-main sequence, main sequence and post-main sequence phases, composition, dynamics and geometries of circumstellar matter, relation to mass loss, and formation of planets. *Prerequisites:* AST 601, AST 602, AST 612.

AST 623 Cosmology (2.0); 2 cr. This course is based on Newtonian Cosmology and covers introduction to General Relativity, Big Bang, inflation, primordial nucleosynthesis, CMB, large-scale structure, and dark matter and dark energy. *Prerequisite:* AST 603.

Physique atomique et moléculaire (1.0); 1 cr. (details on http://www.fs.usj.edu.lb)

Traitement et Analyse de Données (1.0); 1 cr. (details on http://www.fs.usj.edu.lb)

Physique quantique avancée (1.0); 1 cr. (details on http://www.fs.usj.edu.lb)

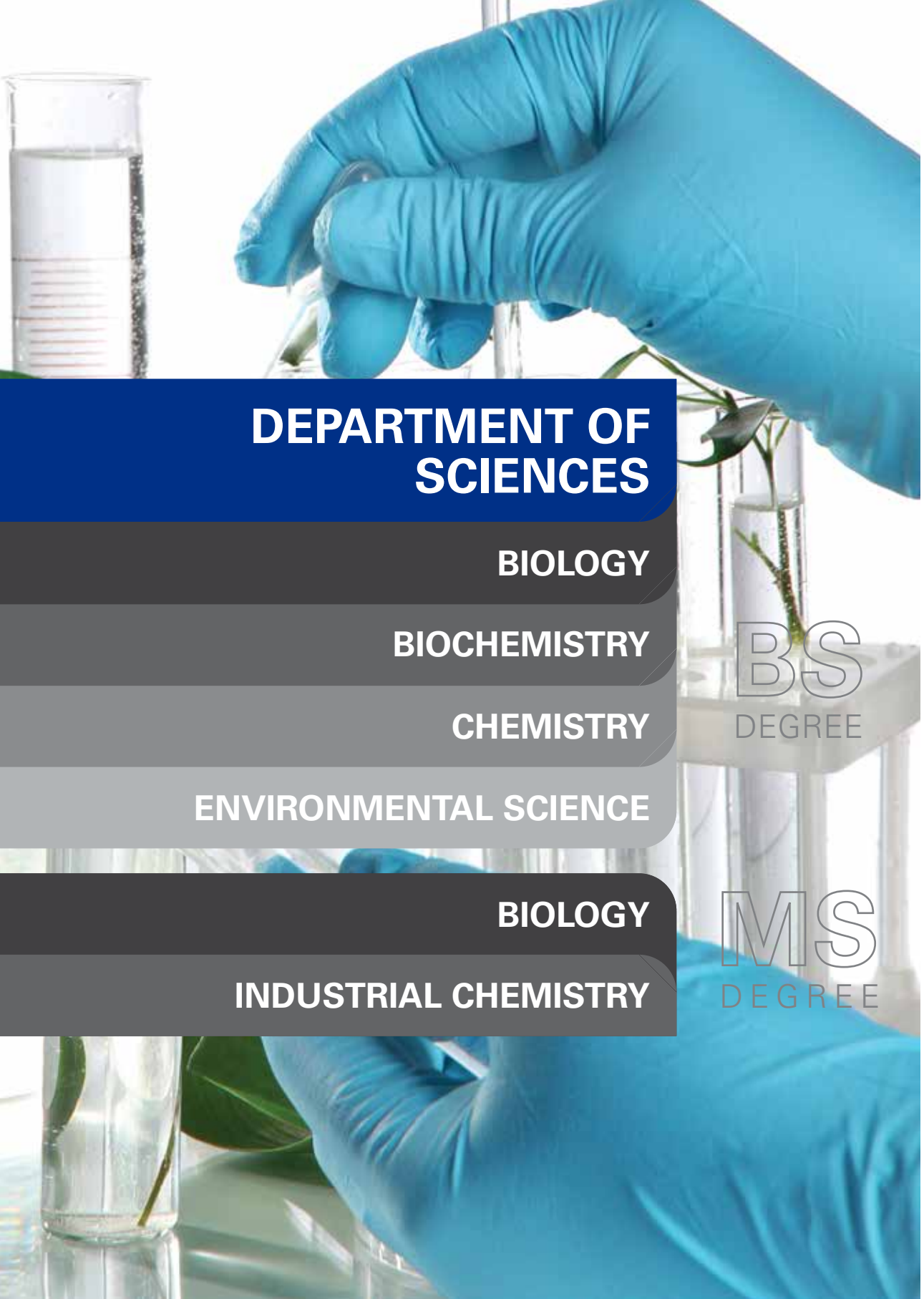
Préparation à la vie professionnelle (1.0); 1 cr. (details on http://www.fs.usj.edu.lb)

Entrepreneurship (1.0); 1 cr. (details on http://www.fs.usj.edu.lb)

Acquisition, conditionnement et traitement des signaux (1.0); 1 cr. (details on http://www.fs.usj.edu.lb)

Physique nucléaire (1.0); 1 cr. (details on http://www.fs.usj.edu.lb)

Informatique pour Data Scientist (1.0); 1 cr. (details on http://www.fs.usj.edu.lb)



DEPARTMENT OF SCIENCES

Professor: Aad, Pauline

Associate Professors: Badr, Layla; Ghanem, Esther; Hage, Tanos G.; Kabrita Bou Serhal, Colette; Khalaf Keirouz, Layla; Maalouf, Rita.

Assistant Professors: Choufani, Joanna; Sawan, Simona.

Senior Lab Instructors: El Ghossein Maalouf, Nada; El Hage El Amm, Rita; Moussa, Layale; Sawan, Simona.

Laboratory Assistants: Berberi, Reve; Saliba Tabet, Elizabeth.

Department Mission
The Department of Sciences (DS) offers comprehensive and well-designed program curricula to provide in-depth knowledge to students interested in the biological, chemical, and closely related sciences. It is committed to furnish quality education through an inherent assortment of major courses. The DS also emphasizes moral integrity and ethics as to prepare competent, fully rounded students who can be leaders in their respective field of study.

Programs of Study
The Department of Sciences offers a Freshman Science program and an undergraduate program leading to the degrees of:

- BS in Biology (92 credits)
- BS in Environmental Science (92 credits)
- BS in Chemistry (92 credits)
- BS in Biochemistry (92 credits)
- MS in Biology (36 credits)
- MS in Industrial Chemistry (36 credits)*

In addition, the Department of Sciences offers a minor in Biology (17 credits), a minor in Environmental Science (16 credits) and a pre-medical curricular emphasis.

The Department of Sciences also offers a variety of undergraduate service courses in Biology, Chemistry, and Geology. These courses are meant to serve academic programs offered by other Faculties at the University.

*Not offered at the present time

Freshman Science Program
The Freshman Science program consists of a minimum of 30 credits. This program is equivalent to the official Lebanese Baccalaureate Part II (Scientific Strands). It normally requires a minimum period of 2 semesters. The Freshman Science program includes courses from the following areas:

Humanities and Social Sciences	9 cr.
Natural Sciences and Mathematics	12 cr.
Electives	**9 cr.**

Based on their intended majors, freshman science students will be advised by the freshman science advisor to enroll in particular courses necessary for declaring a major within FNAS or other faculties. The table below outlines the required freshman courses for each FNAS major.

Intended Majors	Required Freshman Courses	Minimum Passing Grade
Biology, Biochemistry, Environmental Science	MAT 101 CHM 101 or BIO 101	D D
Information Technology and Computer Graphics and Animation	MAT 101 CHM 101 or PHS 101 or BIO 101	D D
Mathematics, Actuarial Sciences	MAT 111 and MAT 112 CHM 101 or PHS 101 or BIO 101	C- D
Physics	MAT 111 and MAT 112 PHS 101	C- C-
Chemistry	MAT 111 and MAT 112 CHM 101 or PHS 101 or BIO 101	D D
Computer Science	MAT 111 and MAT 112 Two courses from the pool: CHM 101 or PHS 101 or BIO 101	D D
Management Information Systems	MAT 101	D

Freshman Arts students can only choose Biology, Biochemistry, Environmental Science, or MIS as their undergraduate majors within the Faculty of Natural and Applied Sciences. Those opting for Biology, Biochemistry, or Environmental Science are required to have completed either CHM 101 or BIO 101. For MIS, completion of MAT 101 is necessary for acceptance.

GUIDE TO SCIENCE COURSES REQUIRED BY STUDENTS APPLYING TO MEDICAL SCHOOL

Minimal course credits commonly considered by medical programs:

Courses	Number of Credits	Core Premedical Courses
Biochemistry and Biology with Laboratory	11	BIO 211 (4 cr.), BIO 212 (4 cr.) and BIO 227 (3 cr.)
Chemistry with Laboratory	11(8 of which are organic chemistry)	CHM 211 (3 cr.), CHM 221 (3 cr.), CHM 222 (3 cr.), and CHM 272 (2 cr.).
Physics with Laboratory	8	Two from: PHS 208 (3 cr.), PHS 209 (3 cr.), PHS 206 (3 cr.). Two from: PHS 278 (1 cr.), PHS 279 (1 cr.), PHS 275 (1 cr.).
English Communication	6	LAC IA: ENL 213 (3 cr.) and ENL 230 (3 cr.) or ENL 223 (3 cr.)
Social Sciences	6	LAC VB: SOL 201 (3 cr.) and PSL 201 (3 cr.)

Remarks:

1- All the mentioned credits/courses in the above table are taken by the biology students. Suggested premedical curriculum for undergraduate students majoring in Biology should follow the same Biology suggested program.

2- All the mentioned credits/courses in the above table are taken by the biochemistry students, except for the BIO 212. Suggested premedical curriculum for undergraduate students majoring in Biochemistry should follow the same biochemistry suggested program.
The choice of BIO elective courses suggested is BIO 212.

3- Non-biology and non-biochemistry premedical students, the following courses are strongly recommended (in addition to the above pools): BIO 220, CHM 215.

THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY

Mission

The Biology program at NDU is designed to provide undergraduates with a rich scope in biology to prepare potential scientists to be competent in their field. It also equips its students with an educational background that enables them to join graduate and medical schools. The program expands the knowledge in the life sciences to non-majors by highlighting the impact of biology on daily life and society.

Program Educational Objectives

- Prepare well-rounded and scholarly proactive biology graduates;
- Instruct students on how to interpret and build on recent research findings;
- Assist students in developing competency by implementing critical and integrative thinking, problem-solving and communication skills;
- Promote professional development and community service; and
- Reinforce values such as ethics, integrity, responsibility, and service.

Program Learning Outcomes

Upon graduation, students will be able to:

- Explain fundamental concepts in the different basic areas of biology;
- Identify the interrelatedness of information delivered by the required major courses as applied in their field of study;
- Evaluate the importance of non-biology courses inherent to the program, such as chemistry and physics, in biological applications;
- Acquire practical experience and build a team spirit through laboratory group work;
- Write legitimate scientific reports which require literature search, selection of relevant papers, interpretation of scientific data, and synthesis of a comprehensive scientific review;
- Criticize scientific findings and evaluate relevant scientific information/ arguments;
- Analyze scientific data and use graphic techniques by using the appropriate statistical tools;
- Discuss and convey scientific information through seminars and class presentations;
- Demonstrate literacy in non-biology areas, such as computer, philosophy, and social studies; and
- Depict the impact of the biological sciences on society and technology.

Degree Requirements (92 credits)

Liberal Arts Curriculum (LAC) **27 cr.**

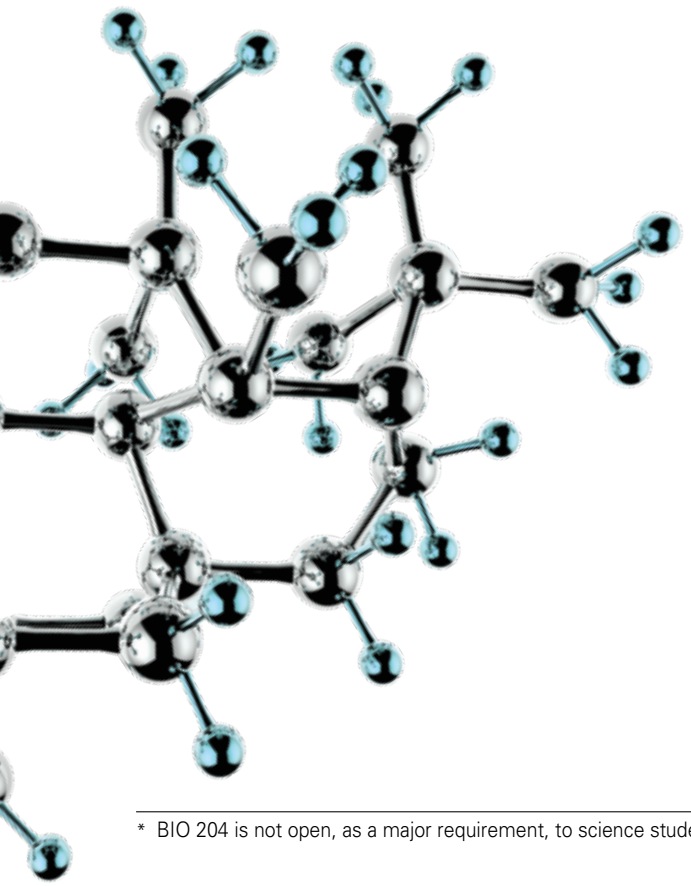
Core Requirements **36 cr.**
BIO 211, BIO 212, BIO 220, BIO 227, CHM 211, CHM 221, CHM 222, CHM 272, PHS 208, PHS 209, PHS 278, PHS 279, STA 203.

Major Requirements **26 cr.**
BIO 324, BIO 335, BIO 485.

Choose 2 biology courses 4 credits each from the pool:
BIO 217, BIO 320, BIO 325, BIO 332, BIO 400, BIO 412, BIO 413, BIO 411

Choose 3 biology courses 3 credits each, from the pool:
BIO 214, BIO 215, BIO 218, BIO 222, BIO 226, BIO 228, BIO 314, BIO 316, BIO 322, BIO 334, BIO 336, BIO 337, BIO 340, BIO 420, BIO 424, BIO 451, BIO 460, BIO 495

Free Electives **3 cr.**
It is advisable that students (especially pre-med) take CHM 215.



* BIO 204 is not open, as a major requirement, to science students.

Minor in Biology (17 credits)

The minor in Biology offers students a basic understanding of major concepts in biology through classroom and laboratory courses. Biology is a dynamic scientific field in view of the many discoveries and their impact on society, such as the human genome project and the development of the world's first "synthetic cell." By enrolling in the minor in Biology, students will have a well-rounded education that will complement their major field of study and will improve their competitiveness in the job market. This minor will be most attractive to students in the medical and health sciences.

Curriculum requirements
Students enrolled in the minor in Biology must complete 17 credits of courses, as follows:

The following three courses (11 credits)
BIO 201 Your Body in Action, 3 cr.,
BIO 211 General Biology I, 4 cr.
BIO 212 General Biology II, 4 cr.

6 credits from the pool: BIO 214, BIO 215, BIO 217, BIO 218, BIO 220, BIO 222, BIO 226, BIO 228, BIO 314, BIO 316, BIO 322, BIO 340, BIO 420, BIO 451.

Graduation requirements
The overall GPA should be a minimum of 2.0.

Undergraduate Courses: Biology

BIO 101 Introduction to Biology (3.0); 3 cr. This course is an introduction to the fundamental principles of biology. It covers chemical basis of life, structure and function of cells and tissues, basic genetic concepts, as well as structure and function of human body systems. *Prerequisite:* Freshman Standing.

BIO 171 Introduction to Biology Laboratory (0.2); 1cr. This is a Laboratory course illustrating the concepts and theory taught in Introduction to Biology.

BIO 201 Your Body in Action (3.0); 3 cr. This course is a balanced introduction to how the human body works and the integrated action of the various systems. It covers how basic concepts in physiology are blended into clinical and technological applications to make learning more appealing and interactive. It also covers special topics regarding wellness and aging.

BIO 203 Discover Biology (3.0); 3 cr. This is a general introductory course that covers the basic principles and concepts of Biology with current applications. It is not open for Biology students.

BIO 204 Environmental Biology (3.0); 3 cr. This course is intended to expose engineers and scientists to the concepts and terminology that are relevant to the broad range of biological disciplines. The first part of the course discusses general introductory topics in biology. The second part emphasizes topics related to environmental applications, namely, sanitary microbiology, ecology and toxicology (it is not open to sciences students as a major requirement).

BIO 207 Biochemistry for Nursing (3.0); 3 cr. This course is a general overview of the basic concepts in biochemistry. It reviews the essentials of general and organic chemistry, discusses the main biochemical pathways in the cell and emphasizes the relevance of the concepts to clinical disorders.

BIO 211 General Biology I (3.2); 4 cr. This course introduces major concepts of biology including the organization of life on all levels; metabolism and energy transactions involved in life processes; the transfer of information and the diversity and classification of organisms. *Prerequisite*: Sophomore Standing.

BIO 212 General Biology II (3.2); 4 cr. It covers the study of structure and life processes in plants and animals. *Prerequisite:* BIO 211.

BIO 214 Human Anatomy (3.0); 3 cr. This course covers general human anatomy, emphasizing human scales, proportions, articulation, and factors influencing movements. *Prerequisite:* BIO 212.

BIO 215 Human Physiology (3.0); 3 cr. This course is a study of the fundamental principles and mechanisms that govern body functions in humans. *Prerequisite:* BIO 211.

BIO 216 Microbiology and Immunology for Nursing (3.0); 3 cr. This course is a study of the essentials of basic and clinical microbiology and immunology that includes immunology, bacteriology, virology, physiology, and mycology. *Prerequisite:* BIO 207.

BIO 217 Pathophysiology (3.2); 4 cr. The content of this course refers to three major areas based on the health-illness continuum: control of normal body function, alteration in body function, and failure in any system or part of body function. *Prerequisite:* BIO 215.

BIO 218 Histology (3.0); 3 cr. This course is an introduction to the microscopic structure of tissues and organs, with particular emphasis on the interrelation between structure and function. *Prerequisite:* BIO 211.

BIO 219 Pathophysiology for Nursing (2.0); 2 cr. This course offers an integrated approach to biological alterations that affect human equilibrium. The content of this course refers to three major areas based on the health - illness continuum: control of normal body function, alteration in body function, and failure in any system or part of body function. *Prerequisites:* BIO 215 or NHS 205.

BIO 220 Genetics (3.0); 3 cr. This course covers Mendelian genetics and extensions of Mendelian analysis, population and quantitative genetics, and molecular genetics: DNA structure and replication, organization of DNA in chromosomes, gene and chromosomal mutations, gene expression and its regulation, and recombinant DNA technology. *Prerequisite:* BIO 211.

BIO 222 Immunology (3.0); 3 cr. This course is based on a detailed description of the components of the immune system: their development, differentiation & functioning during an immune response, immune response to pathogens, tumors & grafts, immunopathologies, and basic immunological techniques. *Prerequisite:* BIO 211.

BIO 226 Evolution (3.0); 3 cr. This course is based on the study of processes that bring about evolutionary changes in organisms, evolutionary trends, patterns of adaptations, and principal factors that influence the patterns of speciation. *Prerequisite:* BIO 220.

BIO 227 Introductory Biochemistry (3.0); 3 cr. This course is an introduction to the structure-function relationships of biomolecules, enzymes, metabolic reactions, and biochemical energetic of living cells. *Prerequisites:* BIO 211, CHM 221 or CHM 213.

BIO 228 Parasitology (3.0); 3 cr. This course provides a general overview on the classification, morphology, development & physiology of human and animal parasites. *Prerequisite:* BIO 212.

BIO 314 Ecology (3.0); 3 cr. This course covers the principles of ecosystems, the interaction of organisms and their environment, food web, energy flow and nutrient cycling in ecosystems. It also studies factors which affect the distribution and abundance of species such as wildlife resources and extinction. *Prerequisite:* BIO 212; also listed as ENS 303.

BIO 316 Economic Botany (3.0); 3 cr. The course provides an introduction to the study of botany and the economic uses of plants in industry, production of food and medicine. *Prerequisite:* BIO 212.

BIO 320 Microbiology (3.2); 4 cr. The course covers structures, isolation, classification, and metabolic diversity of microorganisms. *Prerequisite:* BIO 211.

BIO 322 Virology (3.0); 3 cr. This course provides a general overview on the classification, biophysical and biochemical characteristics of bacterial, and plant and animal viruses. *Prerequisite:* BIO 212.

BIO 324 Plant Physiology (3.2); 4 cr. This course covers basic principles of plant physiology, the physiological processes of green plants and the effect of the environment on these processes. *Prerequisites:* BIO 212, BIO 227.

BIO 325 Marine Biology (3.2); 4 cr. This course covers biology of marine life with emphasis on the roles that marine plants and animals assume in their environmental situations, and the structural and physiological adaptations necessary to fulfill those roles. *Prerequisite:* BIO 212.

BIO 332 Developmental Biology (3.2); 4 cr. The course sheds light on the major events and processes that accompany animal development- from the fusion of two cells to the creation of a more complex multicellular organism. The molecular mechanisms underlying such developmental processes are considered. The impacts of special environmental and pharmacological agents on animal development are also emphasized. *Prerequisite:* BIO 212.

BIO 334 Molecular Biology (3.0); 3 cr. This course provides an understanding of the molecular basis of biological phenomena with

emphasis on the fundamental processes common to all organisms: enzyme catalysis, DNA, RNA and protein synthesis, and mechanism of gene expression. Includes a description of common molecular biology techniques for gene study and manipulation. *Prerequisites:* BIO 220, BIO 227.

BIO 335 Cell Biology (3.2); 4 cr. This course provides students with a basic understanding of the structure and function of the eukaryotic cell. *Prerequisite:* BIO 227.

BIO 336 Basic Biotechnology (3.0); 3 cr. This course covers broadly the development of the field of biotechnology: methods and applications. Covers topics such as principles of recombinant DNA technology and its applications to studies of animals, plants, medicine, forensics and human genome project. *Prerequisite:* BIO 220.

BIO 337 Biochemical Methods (3.0); 3 cr. This course is an introduction to basic methods used in studies of enzymes, proteins, nucleic acids and their interactions. Different methods of extraction, purification, analysis and production of biomolecules are discussed in general but also by means of some precise examples. *Prerequisite:* BIO 227.

BIO 340 Metabolic Endocrinology (3.0); 3 cr. This course is a comprehensive study of the general principles of endocrinology with emphasis on intermediate metabolism and heritable endocrine disorders. *Prerequisite:* BIO 215.

BIO 400 Bioinformatics (3.2); 4 cr. This course is an introduction to computer analysis of macromolecular structure information. This course describes how to access, process and interpret structural information regarding biological macromolecules as a guide to experiments in Biology. *Prerequisite:* BIO 220.

BIO 411 Plant Taxonomy (3.2); 4 cr. This course is an introductory study of identification, naming and classification as well as the history of systematics and the role of evolution in systematics. Laboratory emphasis is on knowledge of the major families of vascular plants and on the collection and identification of local vascular plants. Of particular importance is gaining an understanding of the philosophical bases in taxonomy and the relevance of this field to other areas of biology. *Prerequisite:* BIO 212.

BIO 412 Plant Propagation (3.2); 4 cr. This course covers the principles, practices and techniques in sexual and asexual propagation of horticultural plants, in which seed technology, and seed propagation, rooting and propagation by cutting, grafting and budding systems, layering and propagation by specialized plant structures, biotechnology and tissue culture systems for micropropagation are discussed. *Prerequisite:* BIO 212.

BIO 413 Plant Tissue Culture and Biotechnology (3.2); 4 cr. This course covers principles and techniques for the in vitro culture, propagation, and genetic manipulation of plant cells. *Prerequisite:* BIO 212.

BIO 420 Neurobiology and Behavior (3.0); 3 cr. The course aims at highlighting the basic neural mechanisms which underlie all animal behavior, including the high cognitive processes such as learning and memory. The different types of neural circuits and nerve cell cross-talks in both invertebrates and vertebrates are considered. *Prerequisite:* BIO 212.

BIO 424 Conservation Biology (3.0); 3 cr. The application of biological principles to issues in the conservation biology will be examined within a context that integrates biology, land management, protection and development. *Prerequisite:* BIO 314; also listed as ENS 424.

BIO 451 Environmental Biotechnology (3.0); 3 cr. This course covers the use of biotechnology as it relates to various environmental technologies: biodegradation, remediation, biodegradable materials, energy saving process and chemical production from renewable resources. *Prerequisites:* BIO 211, BIO 212; also listed as ENS 451.

BIO 460 Selected Topics in Biology (3.0); 3 cr. Students study recent and current biological issues and topics in the area of specific competence of the course instructor (or groups of instructors). *Prerequisite:* Consent of advisors.

BIO 485 Seminar; 1 cr. Students work on selected papers from recent biological journals. Under the supervision of an advisor. *Prerequisite:* Senior Standing.

BIO 495 Research in Biology; 1, 2 or 3 cr. This course is based on an independent research project in an area of biology under the direction of a faculty mentor. *Corequisite:* BIO 485.

THE DEGREE OF MASTER OF SCIENCE IN BIOLOGY

The Department of Sciences offers a Master of Science in Biology with thesis work. The purpose of this graduate program is to provide students with in-depth knowledge in advanced topics in Biology. Students are trained to be independent thinkers who are able to identify specific research problems in biology and investigate them. The thesis option provides the necessary background to pursue further research in biology and is most applicable for students planning to enroll in a Ph.D. program.

Mission

The MS Biology program at NDU is designed to provide graduates with in-depth knowledge in advanced topics in biology. The curricula, through course and thesis requirements, trains students to be independent thinkers who are able to identify specific research problems in biology and investigate them.

Program Educational Objectives

- Prepare students for better careers in biology by extending their knowledge, skills and experience;
- Train students to be independent and critical thinkers, capable of solving basic problems in biology by employing appropriate experimental methodology and design;
- Develop students' communication skills and leadership abilities; and
- Accentuate the value of biology in our society.

Program Learning Outcomes

Upon graduation, students will be able to:

- Explain fundamental concepts in the different basic areas of biology;
- Design a study, follow the proper experimental procedures, and apply the appropriate laboratory techniques to investigate scientific problems;
- Troubleshoot experimental procedures;
- Analyze critically primary scientific literature; apply the appropriate statistical tools for data analysis;
- Write scientific papers, which require literature, search, selection of relevant papers, interpretation of scientific data, and synthesis of a comprehensive scientific review; and
- Communicate effectively scientific ideas and findings in written and oral formats.

Admission Requirements

In addition to the University graduate admission requirements, students holding a BS in Biology with a cumulative GPA of at least 3.0 or the equivalent will be accepted, while those with a cumulative GPA of 2.7-2.99 or the equivalent will be conditionally accepted. Students conditionally accepted can take up to 6 credits (two 3 credit courses) during the first semester, and the conditional acceptance will be removed when the student receives a minimum of a "B" grade on each 3-credit course, taken during his or her first semester. Students can be accepted with some Biology undergraduate remedial courses. Students must achieve an average passing grade of 2.7/4.0 ("B-") across the remedial undergraduate courses. These supplementary credits do not count towards the 36 credits required for the MS degree.

A maximum of 9 transfer credits from previous graduate work completed at another accredited institution of higher education may be transferred upon the discretion of the Faculty Graduate Committee.

Graduation Requirements

To satisfy the requirements for the degree of MS in Biology, the student must complete a total of 36 credits, including 6 credits of thesis work. The minimum passing grade is "C." The overall cumulative GPA should be at least 3.0/4.0 with no more than 2 "Cs."

Based on the selection of elective courses in the major, students can choose between two orientations: Molecular Biology or Ecology/Organismal Biology. The selected elective courses should be approved by the advisor.

Thesis work provides the necessary background and research experience to students planning to pursue a Ph.D. and indulge in scientific research activity.

Degree Requirements (36 credits)

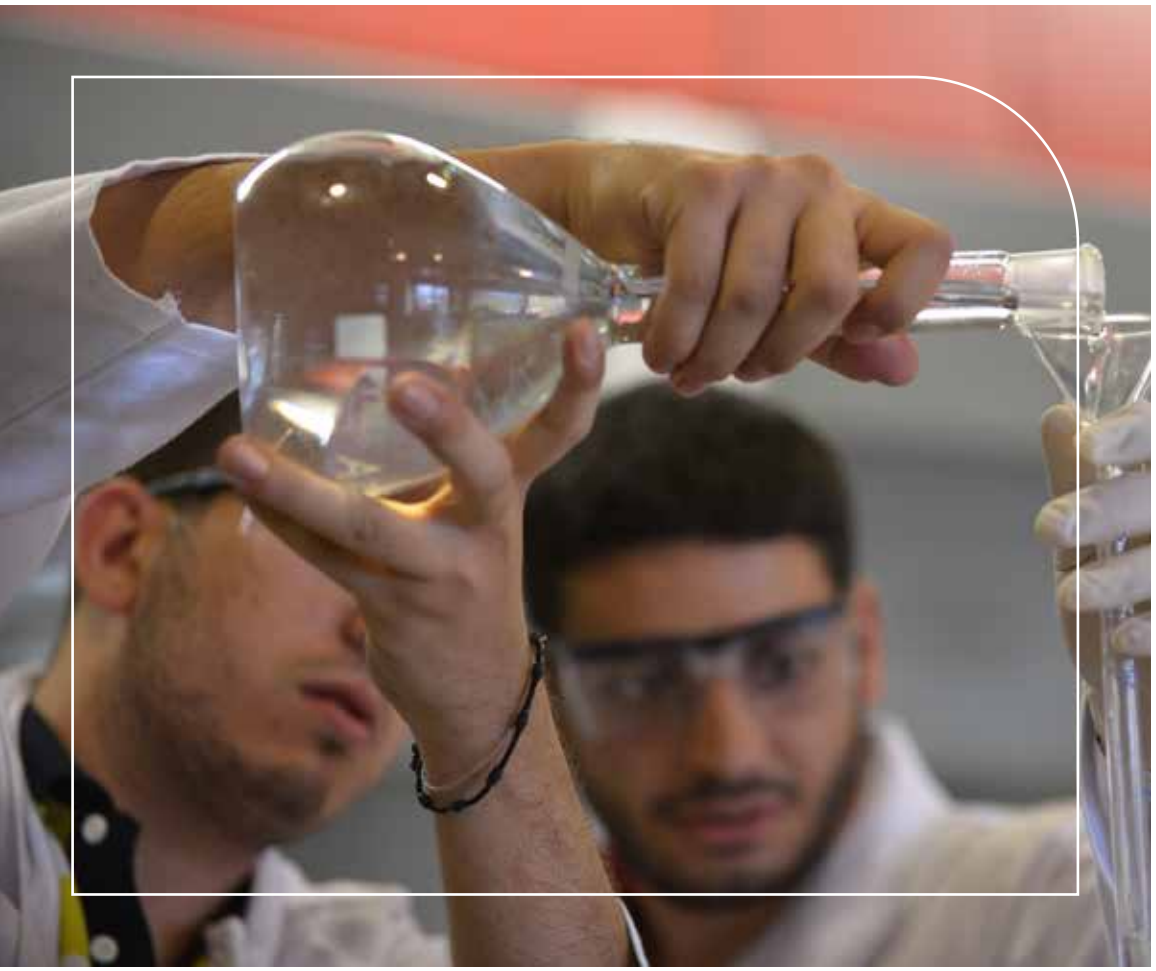
1- Complete the following required major courses: **15 cr.**
BIO 603, BIO 605, BIO 608 or BIO 636, BIO 610 or BIO 628, BIO 670, BIO 671.

2- Complete 9 credits of electives in the major from the following list of courses: **9 cr.**
BIO 609, BIO 611, BIO 613, BIO 617, BIO 619, BIO 620, BIO 625, BIO 626, BIO 630, BIO 631, BIO 635, BIO 637, BIO 638, BIO 641, BIO 645, BIO 646, BIO 650, BIO 660, BIO 680, BIO 681, BIO 682.

3- Complete 6 credits of free electives (not selected in the above course list categories). **6 cr.**

4- Complete the MS thesis requirements. **6 cr.**
BIO 692 Master Thesis I (3 cr.)
BIO 693 Master Thesis II (3 cr.)

The Faculty of Natural and Applied Sciences has specific regulations and guidelines governing Master's thesis courses, the jury, oral defense procedures, grading criteria, manuscript submission, and other relevant information. When registering for Master's thesis courses, each graduate student will receive detailed information about these regulations and guidelines.



Graduate Courses: Biology

BIO 603 Quantitative Methods in Biology (2.3); 3 cr. This course introduces biology students to statistical analysis, data acquisition, hypothesis testing, and computer applications in biological research.

BIO 605 Research Methods in Biology (1.5); 3 cr. This core course is designed to introduce students to conduct scientific research. Under the supervision of an instructor, students select a research project through which they learn about literature review including the access and use of print and electronic resources, proposal writing, research methods, experimental design and analysis in addition to scientific writing. At the discretion of the instructor this project can be extended in taking an additional tutorial course. This may serve as the nucleus of research for students' thesis.

BIO 608 Advanced Biochemistry (3.3); 4 cr. This course covers the reaction bioenergetics and metabolic pathways of biomolecules. It also provides an in-depth knowledge of the function, structure, and mode of action of binding proteins and enzymes.

BIO 609 Advanced Molecular Biology (3.0); 3 cr. This course deals with the structure, function, and regulation of the gene. It covers the regulation mechanisms of gene transcription, RNA stability and translation, gene mapping and recombinant DNA technology. *Prerequisite:* Consent of advisor.

BIO 610 Advanced Cell Biology (3.0); 3 cr. The course will focus in depth on topics of current research interest in the field of cell biology. Students will gain an understanding of the nature of cell biology research by means of a detailed discussion of primary literature (original research papers): experimental design, methods, results obtained, interpretation of results and implications for further studies.

BIO 611 Cancer Biology (3.0); 3 cr. This course provides students with an understanding of the molecular and cellular basis of cancer. Topics include: cell growth and cell death, oncogenes and tumor-suppressor genes, cell cycle regulation, tumor development, invasion and metastasis, and treatment of cancer.

BIO 613 Research Methods in Proteins Science (1.6); 3 cr. This is a laboratory-based course that encompasses the theory and applications of distinctive, research-oriented experiments in protein biochemistry. It covers the methods used in proteins extraction, fractionation, purification, quantification, analysis, characterization, sequencing, and modification.

BIO 617 Reproductive Biology (3.0); 3 cr. The course sheds light on the mammalian hypothalamo-pituitary-gonadal axis and its role in reproduction. It discusses the anatomy and hormonal control of the male and female reproductive systems at different developmental stages, and the mechanisms of fertilization and implantation. The endocrinology of pregnancy is also considered.

BIO 619 Plant Secondary Metabolites (3.0); 3 cr. This course surveys the field of plant natural products that are known as secondary metabolites. It covers the structure and biosynthesis of the main classes of plant secondary metabolites. In addition, the uses of secondary metabolites will be discussed.

BIO 620 Plant Genomics and Biotechnology (3.0); 3 cr. This course explores the modern techniques employed in plant genome modification: cloning and sequencing of nucleic acids, gene isolation and mapping, genetic transformation, and germplasm collection. The relevance of plant biotechnology to the different sectors of the

economy will be discussed. *Prerequisite:* Consent of advisor.

BIO 625 Biological Clocks (3.0); 3 cr. The course provides basic knowledge about biological rhythms and their survival value in various organisms, with special focus on mammals. It provides insight into the mechanisms underlying entrainment to environmental stimuli. Functional significance of the circadian pacemaker in relation to some diseases is also considered.

BIO 626 Developmental Neurobiology (3.0); 3 cr. The course provides comprehensive knowledge about development of the vertebrate nervous system, both central and peripheral. It discusses the factors affecting neuroblast migration, differentiation, identification of target tissues and establishment and maintenance of synapses. Neurogenesis of selected brain regions is also considered. *Prerequisite:* Consent of advisor.

BIO 628 Advanced Human Physiology (3.0); 3 cr. The course provides a thorough coverage of the functions of various body systems, whereby physiological mechanisms at various levels of organization (molecular, cellular, tissue and organ system levels) are considered. It also emphasizes the functional integration among the different organ systems and some clinical correlations.

BIO 630 Microbial Biotechnology (2.3); 3 cr. This course is designed to introduce students to industrial, medical and environmental biotechnology. It covers food microbiology, microbial bioconversions, industrial microorganisms, and production of enzymes, vitamins, antibiotics, and valuable metabolites. *Prerequisite:* Consent of advisor.

BIO 631 Applied Techniques in Molecular Biology (0.4); 2 cr. The course trains students in the basic principles and techniques of molecular biology. Major techniques include cloning, DNA purification, bacterial transformation, electroporation of mammalian cells, restriction analysis, nucleic acid hybridization, southern blotting, and RT-PCR.

BIO 635 Population and Community Ecology (3.0); 3 cr. This course explores population dynamics, distribution and community structure. Emphasis will be placed on population growth and regulation, community stability and diversity, ecological succession, populations' interactions, and coevolution. *Prerequisite:* Consent of advisor.

BIO 636 Plant Ecology (3.3); 4 cr. This course covers biotic and abiotic factors controlling plant distribution and plant communities with special emphasis on the Mediterranean biome. Field trips are required in order to emphasize examples from Lebanon.

BIO 637 Insect-Plant Interactions (3.0); 3 cr. This course covers the ecology and evolution of insect-plant relationships: plant defense, adaptations to herbivorous insects, pollination biology and applications to managed ecosystems.

BIO 638 Invasive Alien Species (3.0); 3 cr. The biology and the impact of invasive alien species on natural ecosystems are discussed in this course. Special emphasis will be placed on invasive alien plants in the Mediterranean biome. *Prerequisite:* Consent of advisor.

BIO 641 Cell Culture Techniques (2.3); 3 cr. This course is designed to teach students the skills of mammalian cell culture, including: maintenance and manipulation of cells from various lines under sterile conditions, cell cloning, somatic cell hybridization and cryopreservation of cells.

BIO 645 Principles of Pharmacology (3.0); 3 cr. The course studies pharmacokinetics and pharmacodynamics of drugs in relationship to dose and time. The principles of drug action and interaction in different systems of the body will be discussed through representative substances.

BIO 646 Signal Transduction (3.0); 3 cr. The course covers the fundamental biochemical mechanisms involved in cellular signal transduction and regulation. Topics include receptors, secondary messengers, protein kinase function, nuclear transport, protein translocation, intercellular signaling mechanisms.

BIO 650 Cellular and Molecular Immunology (2.3); 3 cr. This course is a detailed study of the cellular and molecular components of the immune system: their production, structure, function and manipulation. It also includes major immunological techniques (e.g. ELISA, monoclonal antibody production, immunohistochemistry, western blot, affinity chromatography. etc.), which are also used in other biological sciences. *Prerequisite:* Consent of advisor.

BIO 660 Selected Topics in Biology; 3 cr. This course includes oral presentations and in-depth discussions of selected topics in the area of specific competence of the course instructor (or groups of instructors). Course content will emphasize recent advances in the specific topic area. *Prerequisite:* Consent of advisor.

BIO 670 Seminar I; 1 cr. This course includes oral presentations and discussions by students on selected topics in Biology in an area of special interest.

BIO 671 Seminar II; 1 cr. This course includes oral presentations and discussions by students on selected topics in Biology in an area of special interest.

BIO 680 Tutorial I; 2 cr. This course includes individual study or research on a specially selected topic in Biology directed by a faculty member. *Prerequisites:* Graduate standing and consent of the instructor.

BIO 681 Tutorial II; 3 cr. This course includes individual study or research on a specially selected topic in Biology directed by a faculty member. *Prerequisites:* Graduate standing and consent of the instructor.

BIO 682 Tutorial III; 1 cr. This course includes individual study or research on a specially selected topic in Biology directed by a faculty member. Prerequisites: Graduate standing and consent of the instructor.

BIO 692 Master Thesis I; 3 cr.

BIO 691 Master Thesis; 6 cr.

BIO

BIOCHEMISTRY

THE DEGREE OF BACHELOR OF SCIENCE IN BIOCHEMISTRY

Mission
The BS in Biochemistry at NDU is committed to provide undergraduate students with a solid foundation in the chemical processes that underlie biological systems. The program incorporates laboratory-based courses that endow students with technical skills and the ability to interpret and critically evaluate biochemical information. It equips students with the academic qualifications needed to pursue higher education in the field, or work in biotech companies and related industries.

Program Educational Objectives
- Provide students with a solid basis in the fundamentals and applications of biochemistry;
- Instruct students on the use of the scientific method to design and conduct experiments;
- Develop student communication skills through research project assignments that involve literature review, report writing, and oral presentation; and
- Promote student critical thinking skills, encourage teamwork, and emphasize ethical standards.

Learning Outcomes
Upon graduation students will be able to:
- Express knowledge of the fundamentals and various applications of biochemistry;
- Demonstrate skills in conducting biochemistry-related experiments;
- Apply statistical and quantitative analysis tools in interpreting scientific data;
- Convey scientific results, both orally and in writing;
- Conduct literature search using information technology and library resources;
- Demonstrate problem solving skills and critical thinking in laboratory work; and
- Work effectively in a team.

Degree Requirements (92 credits)

Liberal Arts Curriculum (LAC) **27 cr.**

Core Requirements **33 cr.**
CHM 211, CHM 215, CHM 221, CHM 222, CHM 272, BIO 211, BIO 220, PHS 208, PHS 209, PHS 278, PHS 279, STA 203.

Major Requirements **29 cr.**
BCH 321, BCH 227, BCH 331, BCH 370, BCH 460, BCH 490, CHM 440.
Choose two biochemistry elective courses, 3 credits each.
BCH 334, BCH 337, BCH 340, BCH 428, BCH 432, BCH 433, BCH 434, BCH 435, BCH 336, BCH 437, BCH 438.
Choose one biology elective course, 4 credits.
It is advisable that students take BIO 212 which is a prerequisite for some 4 cr. biology elective courses.

Free Electives **3 cr.**

Undergraduate Courses: Biochemistry

BCH 321 Biophysical Chemistry (3.0); 3 cr. This course covers fundamental principles of solution thermodynamics and chemical kinetics. It develops the rate laws, reactions mechanisms, collision theory, activated complex theory, the laws of thermodynamics and their application to chemical and biochemical systems. *Prerequisite:* CHM 211; also listed as CHM 321.

BCH 227 Biochemistry I (3.0); 3 cr. This course is the first part of a two-semester course in Biochemistry. It covers the structure, function, and reactions of biomolecules. It focuses on proteins, enzymes, carbohydrates, central metabolic pathways, bioenergetics and catabolism. *Prerequisite:* CHM 221; also listed as BIO 227.

BCH 331 Biochemistry II (3.0); 3 cr. This course is the Continuation of BCH 227. Chemistry and metabolism of nucleic acids and lipids, membranes, biosignaling and metabolic regulation, information pathways, and protein synthesis and targeting. *Prerequisite:* BCH 227.

BCH 370 Biochemistry Laboratory (1.3); 2 cr. This course covers biochemical methods used in the study of biomolecules and enzymes. *Prerequisite:* : CHM 215, *Corequisite* BCH 331.

BCH 334 Molecular Biology (3.0); 3 cr. This course provides an understanding of the molecular basis of biological phenomena with emphasis on the fundamental processes common to all organisms: enzyme catalysis, DNA, RNA and protein synthesis, and mechanism of gene expression. Includes a description of common molecular biology techniques for gene study and manipulation. *Prerequisites:* BIO 220 and BCH 227; also listed as BIO 334.

BCH 336 Nutritional Biochemistry (3.0); 3 cr. This course elaborates the interrelationships of major nutrients and the relation of metabolic processes to the overall nutritional health. Covers major metabolic pathways of biomolecules and discusses their dietary influences on common diseases. *Prerequisite:* BCH 227.

BCH 337 Biochemical Methods; (3.0); 3 cr. This course introduces the basic methods used in studies of enzymes, proteins, nucleic acids and their interactions. Different methods of extraction, purification, analysis and production of biomolecules are discussed in general but also by means of some precise examples. *Prerequisite:* BCH 227; also listed as BIO 337.

BCH 340 Metabolic Endocrinology (3.0); 3 cr. This course is a study of the role of chemical messengers in the control of physiological and metabolic processes. This course deals with the biosynthesis, chemistry, and secretion of hormones, as well as their mechanism of action. *Prerequisites*: BCH 227 or BIO 215; also listed as BIO 340.

BCH 428 Drug Design and Action (3.0); 3 cr. This course covers the stages of the drug discovery process, drug-target interactions, mechanism of action of drugs, routes of delivery in the human body, chemical aspects of drug metabolism and the concept of pro-drugs. *Prerequisites:* CHM 222 and BCH 227 or CHM 335; also listed as CHM 428.

BCH 432 Industrial Biochemistry (3.0); 3 cr. This course covers the applications of biochemical systems, such as living cells and enzymes, to the production of commercially valuable compounds useful in nutrition, agriculture, medicine, and the food and chemical industries. *Prerequisite:* BCH 227.

BCH 433 Enzymology and Protein Chemistry (3.0); 3 cr. This course studies the isolation, kinetics, mechanisms, regulation, and industrial applications of enzymes. Analysis and modification strategies of proteins. *Prerequisite:* BCH 227.

BCH 434 Environmental Biochemistry (3.0); 3 cr. This course covers the common agricultural chemicals and industrial pollutants from biochemical perspective. The effects of agricultural and industrial practices on the health of soil, plants, animals, ecosystems, and man are discussed. *Prerequisite:* BCH 331.

BCH 435 Biochemical Toxicology (3.0); 3 cr. This course covers the development of the biochemical and molecular effects induced by toxicants. The chemical reactivity, uptake, distribution, activation, and excretion of xenobiotics are discussed. *Prerequisite:* BCH 227.

BCH 437 Signal Transduction (3.0); 3 cr. This course covers the fundamental mechanisms of signal transduction and regulation. Topics include protein kinase, secondary messengers, nuclear transport, protein translocation, intercellular mechanisms. *Prerequisite:* BCH 227.

BCH 438 Plant Biochemistry (3.0); 3 cr. This course covers topics that are unique to plant biochemistry. It includes the metabolic pathways that are involved in the generation of carbon and energy sources, in addition to the various plant secondary metabolites. *Prerequisite:* BCH 227.

BCH 460 Selected Topics in Biochemistry (2.0); 2 cr. This course covers discussions of topics related to biochemistry, molecular biology, and biotechnology. The course includes readings, seminars, and scientific writing. Visits to laboratories may be scheduled to introduce students to the techniques used in research by solving minor problems in biochemistry. *Prerequisite:* Senior Standing.

BCH 490 Biochemistry Project; 2 cr. This course is based on the participation in a laboratory research project by arrangement with a faculty member. The project includes literature review, experimental work, and a final report. *Prerequisite:* Senior Standing.

CHEMISTRY

THE DEGREE OF BACHELOR OF SCIENCE IN CHEMISTRY

Mission

The Chemistry program at NDU is committed to provide students with high quality education in preparation for professional and graduate chemistry-related careers. To achieve its mission of academic excellence, the program integrates a judiciously designed comprehensive curriculum, and a research module for a sound academic, professional, and personal development of students.

Program Educational Objectives

- Acquire theoretical and practical skills necessary to pursue advanced degrees or professional development;
- Apply educational proficiency and critical thinking aptitude to design and/or conduct chemistry related undertakings or projects;
- Conduct an effective search of information and use efficient communication skills in conveying ideas or topics, verbally or in writing, to various audiences; and
- Apply ethical standards and teamwork in their professions for a better societal and natural environment.

Student Outcomes (SO) Adopted from ABET'S

Upon graduation, students will be able to demonstrate:

- An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline;
- An ability to formulate or design a system, process, procedure or program to meet desired needs;
- An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions;
- An ability to communicate effectively with a range of audiences;
- An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts; and
- An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

Degree Requirements (92 credits)

General Chemistry

Liberal Arts Curriculum (LAC) **27 cr.**

Core Requirements **25 cr.**
CHM 211, CHM 215, CHM 221, CHM 222, CHM 272, MAT 213, MAT 224, PHS 212, PHS 271.

Major Requirements **34 cr.**
CHM 321, CHM 322, CHM 323, CHM 327, CHM 335, CHM 372, CHM 374, CHM 440, CHM 490.

Select three Chemistry courses at the 300 level and above, each worth 3 credits, from the following list:
CHM 331, CHM 415, CHM 416, CHM 421,CHM 425, CHM 427, CHM 428, CHM 430,CHM 431, CHM 432, CHM 433, CHM 434.

Free Electives **6 cr.**

Undergraduate Courses: Chemistry

CHM 101 General Chemistry I (3.0), 3 cr. This course is an introductory course about the atomic theory, chemical bonding and periodicity, stoichiometry; the state of matter, gases and solutions.

CHM 102 General Chemistry II (3.0); 3 cr. This course covers chemical equilibrium, acids and bases, electrochemistry, an overview of the groups in the periodic table, and an introduction to organic chemistry and nuclear chemistry. *Prerequisite:* CHM 101.

CHM 171 General Chemistry I Laboratory (0.2); 1 cr. This course is based on selected experiments in General Chemistry I. *Corequisite:* CHM 101.

CHM 201 Chemistry in Everyday Life (3.0); 3 cr. This course emphasizes the importance of chemistry in our everyday life. It provides students with a practical understanding of substances such as fuel, plastics, detergents, and drugs. This helps them to adopt sustainable practices and healthier lifestyles.

CHM 202 Chemistry of Art (3.0); 3 cr. This chemistry course is directed to students with no prior knowledge in chemistry. It explores the intersection of chemistry with arts. The Basic principles of chemistry are applied to topics of colors, paints, paper, fibers, clay, glass, and metals. Art conservation and restoration, in addition to chemical hazards in art, are also covered.

CHM 205 Basic Chemistry (3.0); 3 cr. This course provides a contemporary introduction to the basic principles in chemistry. It covers the principles of elements, atoms, and molecules, their physical changes, chemical reactivity, and electronic structure. It develops an understanding of bonding and structure, in addition to naming various compounds. Applications concerning quantitative composition of compounds, stoichiometric calculations, limiting reagent, and reaction yield are practiced in this course. The different states of matter are covered with the emphasis on the gas laws and the kinetic molecular theory of gases, and the colligative properties in the liquid state. Finally, acids and bases, titration, and buffers are discussed in the context of chemical equilibrium.

CHM 211 Principles of Chemistry (3.0); 3 cr. This course deals with chemical nomenclature, stoichiometry, atomic theory, Lewis structure and VSEPR model, intermolecular forces, hybridization, acid-base and solubility equilibria, thermochemistry, thermodynamics, kinetics, redox reactions. The course is designed for sciences and engineering students.

CHM 213 Basic Organic Chemistry (3.0); 3 cr. This course provides a brief overview to basic principles in Organic Chemistry including the nomenclature, structure, synthesis and reaction of the main function groups of organic compounds. *Prerequisites:* CHM 205 or CHM 211.

CHM 215 Quantitative Analysis (3.3); 4 cr. This course deals with the theoretical and practical aspects of chemical analysis. It covers the principles of chemical equilibrium and its application on gravimetric and titrimetric methods of analysis in addition to the fundamental principles of spectroscopy. Statistical evaluation of the accuracy and precision of experimental data is discussed. *Prerequisites:* CHM 205 or CHM 211.

CHM 221 Organic Chemistry I (3.0); 3 cr. This course is an introduction to the basic principles and concepts of organic chemistry with an emphasis on the relation between structure and properties, chemistry of hydrocarbons and steriochemistry. *Prerequisite:* CHM 211.

CHM 222 Organic Chemistry II (3.0); 3 cr. This course is a study of substitution and elimination reactions and of the chemistry of aromatic compounds, alcohols, ethers, epoxides, aldehydes and ketones, carboxylic acids and derivatives, amines and carbohydrates. *Prerequisite:* CHM 221.

CHM 270 Basic Chemistry Lab (0.2); 1 cr. This laboratory course familiarizes students with laboratory techniques and equipment common to chemistry laboratories and reinforces the concepts learned in CHM 205 Basic Chemistry.

CHM 271 Principles of Chemistry Laboratory (0.2); 1 cr. This course is an introduction to laboratory techniques, selected experiments in chemical analysis. *Corequisite:* CHM 211.

CHM 272 Organic Chemistry Laboratory (1.2); 2 cr. The aim of this course is to familiarize students with the main techniques encountered in organic chemistry lab such as extraction, recrystallization, simple and fractional distillation, thin layer and column chromatography, identification of functional groups, conduct chemical reactions. Emphasis is placed on the theory of these techniques. *Corequisite:* CHM 222.

CHM 273 Organic Chemistry Laboratory (0.2); 1 cr. This course is designed for nutrition students and introduces the methods of separation and purification including extraction, recrystallization, simple and fractional distillation and thin layer chromatography. Identification of functional groups and chemical reactions will be also included. *Prerequisite:* CHM 270. *Corequisite:* CHM 213.

CHM 321 Physical Chemistry I (3.0); 3 cr. This course covers fundamental principles of chemical dynamics and chemical thermodynamics. A theoretical study of the macroscopic behavior and microscopic structure of matter using mathematical models; kinetic theory of gases, rate laws, mechanism, collision theory, activated complex theory; the three laws of thermodynamics and their application to chemical systems; thermodynamics of chemical reactions, thermodynamics of solutions, thermodynamics of phase transformation, chemical equilibrium. *Prerequisite:* CHM 211.

CHM 322 Physical chemistry II (3.3); 4 cr. This course deals with Quantum Chemistry and Spectroscopy. Topics covered are Quantum theory, postulates, Schrodinger equation, harmonic oscillator model, hydrogen atom, hydrogenic wave function, Pauli principle, rotational motion, atomic structure, molecular electronic structure, Huckel approximation, hybridization, symmetry, rotational and vibration spectroscopy, electronic spectroscopy of molecules. *Prerequisite:* CHM 321.

CHM 323 - General Inorganic Chemistry - (3.0); 3 cr. This course covers the structures of atoms, molecules, and solids. The fundamental principles of structure are then related to trends in molecular geometry and symmetry. The course also focuses on two major types of reactions; the acid and base, and the oxidation and reduction reactions. Inorganic instrumental techniques and fundamental inorganic industrial processes are addressed.

CHM 327 Inorganic Chemistry II (3.0); 3 cr. This course includes structures, stereochemistry, reaction mechanisms and physical properties with emphasis on transition metal coordination and sigma and pi bonded organometallic compounds and their role in catalysis. Metals in biological system will be covered. *Prerequisite:* CHM 323.

CHM 331 Organic Identification and Structure (1.4); 3 cr. This course studies the theoretical and practical aspects of the separation, purification and identification of organic compounds. The identification of pure compounds and of components of mixtures of organic compounds is accomplished by chemical and spectral methods and/or synthesis of derivatives. It covers the theory of NMR (including two-dimensional proton), infrared and mass spectrometry with emphasis on spectral interpretation skills needed for the elucidation of structure. *Prerequisites:* CHM 222, CHM 272.

CHM 335 Biological Chemistry (3.0); 3 cr. Topics covered include structures and functions of important biomolecules, methods of structure determination, kinetics of enzyme-catalyzed reactions and enzyme mechanisms. *Prerequisite:* CHM 222.

CHM 372 Advanced Synthesis Laboratory (0.4); 2 cr. Advanced laboratory methods for the preparation of organic and inorganic molecules are covered as well as synthetic techniques, purification techniques and multi-step syntheses with the characterization of intermediates and products by IR, NMR and MS. *Prerequisites:* CHM 323, CHM 222, CHM 272.

CHM 374 - Inorganic Chemistry Laboratory - (0.3); 1 cr. This course focuses on laboratory methods on the synthesis, identification, and characterization of inorganic compounds. Emphasis on multi-step syntheses of inorganic coordination complexes.

CHM 415 Environmental Chemistry I (3.0); 3 cr. This course covers the natural chemical processes on Earth and the anthropogenic effects on the environment. It also includes the chemical processes occurring in the lithosphere, hydrosphere, and atmosphere are analyzed, the effects of primary and secondary pollutants, their interactions between each other and natural substances, and their propagation in the environment are covered. *Prerequisite:* Senior Standing.

CHM 416 Environmental Chemistry II (3.0); 3 cr. This course covers special chemistry topics relevant to environmental protection and environmental systems such as water, air, and soil. Selected topics include: polluted sites decontamination, wastewater and oil spill treatment, hazardous waste management, chemical sources of renewable energy, and an overview of Green Chemistry. *Prerequisite:* Senior Standing.

CHM 420 Industrial Chemistry I: Unit Operations (3.0); 3 cr. This course covers the study of unit operations: distillation, liquid-liquid extraction, gas-liquid extraction, gas absorption, filtration, evaporation, centrifugation, drying and leaching operations. The fundamentals of material balances will be introduced. *Prerequisite:* Senior Standing.

CHM 421 Industrial Chemistry II: Chemical Processes (3.0); 3 cr. This course provides a broad overview of technologies and processes involved in chemical industry. Topics covered: industrial production of organic and inorganic chemicals, fermentation processes, Petroleum refining, Polymer processing, industrial catalysis, product development from bench to pilot plant to full-scale manufacturing, process economics and environmental considerations. *Prerequisites:* CHM 222, CHM 323.

CHM 425 Modern Methods of Organic Synthesis (3.0); 3 cr. The course presents the most important reaction types as tools for research scientist to use in synthesis. Topics include formation of carbon-carbon bonds, molecular rearrangement, cycloaddition and pericyclic reactions, photochemical and free radical reactions, oxidation and reduction reactions with emphasis on chemo-, regio- and stereoselectivity. General principles of retrosynthetic analysis will be used to design simple synthetic schemes for synthesis of target molecules, including important natural products. *Prerequisite:* CHM 222.

CHM 427 Pharmaceutical Chemistry (3.0); 3 cr. This course explores in depth the synthesis of pharmaceutically important molecules such as antibiotics, cardiovascular, anti-inflammatory, chemotherapeutic agents and more. Special attention is placed on the strategy and tactics in synthesis and reaction mechanisms. Real case studies of process development of drug substances in pharmaceutical industry will be illustrated to show the problems which may be encountered in scaling up chemical synthesis and the ways these problems may be overcome. *Prerequisite:* CHM 425.

CHM 428 Drug Design and Action (3.0); 3 cr. This course will give an overview of how drugs are designed and function to help synthetic chemists improve their understanding of drug chemistry. It covers stages of drug discovery process, drug-target interactions, pharmacological properties in drug design, elucidation of mechanism of action of drugs, description of routes for the delivery of drugs in the human body, chemical aspects of drug metabolism and the concept of pro-drugs. *Prerequisites:* CHM 222 and CHM 335 or BIO 227.

CHM 430 Polymer Chemistry (3.0); 3 cr. This course covers structure, characterization, synthesis and classification of polymers, mechanical properties, stability, and applications in packaging, insulators and fibers etc. *Prerequisites:* CHM 222, CHM 322.

CHM 431 Atmospheric Chemistry and Pollution (3.0); 3 cr. This course covers the chemical composition of the earth's atmosphere and the major factors that control its chemical composition. It also emphasizes the effects of the biosphere and the changes induced by human activities. Selected topics include climate change, ozone depletion, urban air pollution, and acid rain. *Prerequisite:* CHM 322.

CHM 432 Chemistry and Processing of Food (3.0); 3 cr. This course provides an overview of the chemical and physical properties of food components and additives. It covers the processing operations of important food classes (beverages, fruits and vegetables, dairy products), major chemical changes taking place during processing and storage of foods, and principal methods of analysis used in the food industry. *Prerequisite:* CHM 222.

CHM 433 Soil Chemistry and Pollution (3.3); 4 cr. This course covers chemistry of inorganic and organic soil components with emphasis on environmental significance of soil solution-solid phase equilibrium, sorption phenomena, ion exchange processes, reaction kinetics, redox reactions, and acidity and salinity processes. It also covers soil pollution such as sources, dispersion, and remediation methods. *Prerequisites:* CHM 215, CHM 222, BIO 211.

CHM 434 Materials Chemistry (3.0); 3 cr. This course gives an introduction to materials chemistry and solid state chemistry together with an overview of common synthesis and characterization of materials with emphasis on molecular understanding of their chemical, electrical, optical, mechanical, thermal and magnetic properties. Topics covered include inorganic solids, polymers, nanoscale materials and biological materials with their potential technological applications. *Prerequisites:* CHM 222, CHM 322, CHM 323.

CHM 440 Instrumental Analysis (3.3); 4 cr. This course covers theory, practice and applications of modern analytical instrumentation: different aspects of instrumental analysis in areas of separation sciences and spectroscopy. It also introduces instrumental methods of analysis, including gas and liquid chromatography, atomic, ultraviolet/visible, infrared, and fluorescence spectroscopy, nuclear techniques, and electro-chemical methods. The use and the interpretation of data from these instruments will be practiced in the laboratory. *Prerequisite:* CHM 215; Senior Standing.

CHM 490 Chemistry Project; 2 cr. Upon the consent of an advisor the student carries out a research project, gaining deeper skills in problem-solving, performing a literature review, experimental techniques, designing experiments, analyzing data and preparing a final report. *Prerequisite:* Senior Standing.

INDUSTRIAL CHEMISTRY

THE DEGREE OF MASTER OF SCIENCE IN INDUSTRIAL CHEMISTRY*

Mission, Vision & Values

The MS in Industrial Chemistry at NDU aims to prepare highly qualified students in the field. It is designed to impart the principles of interactive learning and hands-on research proficiency. The program includes a thesis that paves the way for pursuing careers in applied chemistry and/or enrolling in Ph.D. programs.

Program Educational Objectives

- Provide students with a first-rate educational experience in the field of industrial chemistry;
- Prepare students for excellent careers in industrial chemistry by boosting both their scientific and personal expertise;
- Coach students to be independent and critical thinkers, capable of undertaking initiatives and dealing confidently and scientifically with incipient issues pertaining to industrial chemistry; and
- Foster a sense of citizenship in students by nurturing their communication skills and ethical standards.

Program Learning Outcomes

Upon graduation, students will be able to:

- Build a strong understanding of the fundamentals in chemical theories and their applications in industry;
- Plan and carry out experimental research and statistical analysis;
- Identify and solve problems in industrial chemical processes;
- Understand the development, ethics, and environmental issues of chemical industry;
- Know the proper procedures and regulations for safe handling and use of chemicals and instrumentation;
- Review and assess scientific literature critically; and
- Communicate their research ideas both orally and in writing.

Admission Requirements

In addition to the University graduate admission requirements, students holding a BS in Chemistry with a cumulative GPA of at least 3.0 or the equivalent will be accepted, while those with a cumulative GPA of 2.7-2.99 or the equivalent will be conditionally accepted. Students conditionally accepted can take up to 6 credits (two 3 credit courses) during the first semester, and the conditional acceptance will be removed when the student receives a minimum of a "B" grade on each 3-credit course, taken during his or her first semester. Students can be accepted with some chemistry undergraduate remedial courses. Students must achieve an average passing grade of 2.7/4.0 ("B-") across the remedial undergraduate courses. These supplementary credits do not count towards the 36 credits required for the MS degree.

A maximum of 9 transfer credits from previous work completed at another accredited institution of higher education is permitted upon the discretion of the Faculty Graduate Committee.

*Not offered at the present time

Graduation Requirements
To satisfy the requirements for the degree of MS in Industrial Chemistry, the student must complete a total of 36 credits, including 6 credits of thesis work. The minimum passing grade is "C." The overall cumulative GPA should be at least 3.0/4.0 with no more than 2 "Cs."

Degree Requirements (36 credits)

Required major courses (15 credits)

• CHM 602	Chemometrics	3 cr.
• CHM 606	Chemistry in the Workplace	1 cr.
• CHM 607	Research Methods in Chemistry	3 cr.
• CHM 609	Industrial Chemical Processes	3 cr.
• CHM 603	Advanced Organic Chemistry	3 cr.
or		
• CHM 608	Advanced Inorganic Chemistry	3 cr.
• CHM 680	Seminar I - Industrial Training	1 cr.
• CHM 681	Seminar II	1 cr.

Electives in the major (9 credits):

A choice of 1 course from each of the following pools:

Processing of Renewable Materials - 3 cr.:

• CHM 612	Green chemistry and Sustainable Industrial Technology	3 cr.
• CHM 615	Food Chemistry and Processing	3 cr.
• CHM 626	Biomass Processing Chemistry	3 cr.
• CHM 636	The Industry of Biopolymers	3 cr.

Nanotechnology and New Industrial Materials - 3 cr.:

• CHM 604	Kinetics and Catalysis	3 cr.
• CHM 628	Chips and Sensors: design and application	3cr.
• CHM 634	Electrochemistry	3 cr.
• CHM 635	Surface Chemistry	3 cr.
• CHM 648	Nanotechnology: The Industrial Revolution	3 cr.

Petroleum and Plastic Chemistry - 3 cr.:

• CHM 633	Chemistry of Polymers and Their Applications	3 cr.
• CHM 641	Petrochemistry	3 cr.
• CHM 647	Organic Synthesis	3 cr.

Elective courses (6 credits):

• CHM 670	Tutorial I	2 cr.
• CHM 671	Tutorial II	3 cr.
• Other graduate level, 3 cr.-courses related to the field and approved by the Department		

MS thesis (6 credits):

• CHM 691	Master Thesis I	3 cr.
• CHM 692	Master Thesis II	3 cr.

The Faculty of Natural and Applied Sciences has specific regulations and guidelines governing Master's thesis courses, the jury, oral defense procedures, grading criteria, manuscript submission, and other relevant information. When registering for Master's thesis courses, each graduate student will receive detailed information about these regulations and guidelines.

Graduate Courses: Chemistry

CHM 602 Chemometrics (3.0); 3 cr. This course analyzes data generated from instrumentation used in chemistry. It emphasizes on the understanding and practical application of Chemometric methods such as principal components analysis (PCA) and partial least squares (PLS) regression, using basic statistics and computational computer programming.

CHM 603 Advanced Organic Chemistry (3.0); 3 cr. The course focuses on the study of thermodynamics, kinetics, and stereochemistry of reaction mechanisms. Topics include nucleophilic substitution, elimination, radical reactions, aromaticity and electrophilic substitution in aromatic rings. In addition, a comprehensive study on non-classical carbocations, carbanions, carbenes, and carbanoids is considered.

CHM 604 Kinetics and Catalysis (3.0); 3 cr. This course covers the principles and applications of heterogeneous and homogeneous catalysis. Catalyst synthesis and characterization, adsorption, reaction kinetics, and mass transfer effects are covered. The types of reactions considered include nitrogen fixation, chlorine chemistry, catalysis by transition metal complexes, and catalysis in petroleum refining.

CHM 606 Chemistry in the Workplace (1.1); 1 cr. This course covers the basic theories of management functions: planning, organizing, leading, and controlling. It explores current issues and challenges in chemical industry, such as increasing effectiveness, developing a strong project, stimulating the application of new research findings, and the appropriate use of resources in goal achievement.

CHM 607 Research Methods in Chemistry (3.0); 3 cr. The course introduces students to the methods of conducting a scientific research. Students select a research topic, approved by the instructor, through which he learns the basics, techniques, and methods of research. The course includes strategies to access and use print and electronic resources, literature evaluation, proposal writing, experimental design, data analysis, handling comments and recommendations, and scientific writing.

CHM 608 Advanced Inorganic Chemistry (3.0); 3 cr. This course covers the structure of inorganic compounds, the chemistry of coordination compounds and mechanisms of inorganic reactions. Physical methods of determination of the structure of inorganic molecules are addressed. The fundamental concepts of coordination chemistry are developed. Mechanisms of substitution and oxidation-reduction reactions, metal ion catalysis and photochemistry, with the application of symmetry rules are also addressed.

CHM 609 Industrial Chemical Processes (3.0); 3 cr. This course focuses on industrial processes used in converting raw materials into useful industrial products. The course emphasizes on understanding the relationship between natural resources, chemical transformation and industrial waste generation with insights derived from green chemistry.

CHM 612 Green chemistry and Sustainable Industrial Technology (3.0); 3 cr. This course introduces modern approaches for more sustainable emerging industries by developing environmentally friendly products, minimizing waste, using renewable resources, and maintaining cleaner processes throughout. Students are required to participate in discussions as well as in oral presentations about real-cases in industrial green chemistry in a wise and organized manner.

CHM 615 Food Chemistry and Processing (3.0); 3 cr. This course deals with the chemical and physical composition of food substances and additives as well as the relationship between the chemical nature of food and its rheological and sensory properties. It develops the changes taking place during processing and storage of food as well as the methods of analysis used in the food industry.

CHM 626 Biomass Processing Chemistry (3.0); 3 cr. This course presents an overview of the thermochemical and biochemical conversion of biomass fibers to bioenergy fuel and bioproducts. The course covers the chemistry and treatment of lignocellulosic fibers, their enzymatic hydrolysis and biochemical conversion to value-added products. The sustainability of biomass conversion and their environmental impact are discussed.

CHM 628 Chips and Sensors: design and application (3.0); 3cr. This course introduces the field of sensors, design and production. Fundamental applications of chemical compounds in industrial products, environmental and agricultural samples, and biological systems are discussed.

CHM 633 Chemistry of Polymers and Their Applications (3.0); 3 cr. This course explores the preparative methods, characterization techniques and application of well-defined polymers in material science, drug delivery and biomedical applications. Physical behavior in solution, thermodynamics, mechanical properties, and statistics of polymers are explored.

CHM 634 Electrochemistry (3.0); 3 cr. This course addresses the fundamentals and applications of electrochemistry. It provides an overview of electrode processes and potentials, thermodynamics of cells, and kinetics of electrode reactions. It discusses electroanalytical and physical electrochemical techniques including potential step methods, potential sweep methods, and hydrodynamic methods.

CHM 635 Surface Chemistry (3.0); 3 cr. This course emphasizes on fundamental concepts of surface chemistry. Considerations of thermodynamics, kinetics, surface structure, electronic structure, catalysis and reactivity are explored using examples from the current literature.

CHM 636 The Industry of Biopolymers (3.0); 3 cr. The course provides a comprehensive review of the major classes of biopolymers and their everyday life applications ranging from packaging materials to specialty products in medicine. The course discusses the chemistry, molecular structures, high-order structures, sources, and disposal of polymers from renewable resources such as proteins, polysaccharides, and vegetable oils. It also highlights polymers from naturally created analogues.

CHM 641 Petrochemistry (3.0); 3 cr. This course addresses the origin and processing of crude oil, the physical and chemical properties of refined oil, and petrochemicals and their applications. It also covers the market and consumption of petroleum products worldwide.

CHM 647 Organic Synthesis (3.0); 3 cr. The course involves an extensive survey on molecular structure and application of new synthetic strategies in designing organic material from both mechanistic and synthetic viewpoints. Students learn how to plan the synthesis of complex molecules, the use of protecting groups, as well as reduction, oxidation and alkylation reactions in modern organic chemistry.

CHM 648 Nanotechnology: The Industrial Revolution (3.0); 3 cr. This course covers fundamental concepts of a wide array of nanomaterials, such as carbon nanotubes, nanostructured metal and metal oxides /ceramics/ composites, nanowires, quantum dots, nanoclays, functional hybrid nanoparticles, and bio-related and magnetic nanomaterials. Advanced optical and

electronic characterization techniques, and their usefulness in various industries are described.

CHM 670 Tutorial I; 2 cr. This course is an individual study on a specially selected topic in chemistry directed by a faculty member. *Prerequisite:* graduate standing and consent of the instructor.

CHM 671 Tutorial II; 3 cr. This course is an individual study on a specially selected topic in chemistry directed by a faculty member. *Prerequisite*: graduate standing and consent of the instructor.

CHM 673 Analytical Chemistry Laboratory (0.3); 1 cr. This laboratory provides hands-on experience on techniques such as atomic absorption, liquid chromatography, gas chromatography/ mass spectrometry, gas chromatography/ nitrogen phosphorus detector and electron capture detector, electrochemistry, Fourier transform infrared spectroscopy. The remainder of the term is devoted to special projects in which students apply what they have learned to solve chemical problems in the laboratory.

CHM 680 Seminar I - Industrial Training; 1 cr. Practical training in industry is required for all students in order to have them gain knowledge and hand-on-experience of various industrial processes.

CHM 681 Seminar II; 1 cr. This course is based on oral presentations and discussions by students on selected topics in chemistry in an area of special interest.

CHM 691 Master Thesis I; 3 cr.

CHM 692 Master Thesis II; 3 cr.

CHM

ENVIRONMENTAL SCIENCE

THE DEGREE OF BACHELOR OF SCIENCE IN ENVIRONMENTAL SCIENCE

Mission

The mission of the Environmental Science program at NDU is to provide high quality education through a rigorous interdisciplinary approach. The program emphasizes the study of interactions between environmental processes and human behavior in addition to environmental problem solving.

Program Educational Objectives

- Provide students with theoretical knowledge about basic sciences including biology, chemistry, physics and statistics; as well as environmental sciences various topics including pollution, health, resources conservation and management, regulations and risk assessment;
- Assist students in developing analytical skills including analysis of environmental problems, data collection and analysis and modeling of human environment systems knowledge;
- Offers a multidisciplinary learning environment promoting high-level cognitive thinking skills including critical-thinking, problem-solving skills, and integrative thinking; and
- Strengthen integrity, responsibility, compassion, and service.

Program Learning Outcomes

Upon graduation, students will be able to:

- Demonstrate a clear understanding of the relationships between environmental processes and human behavior; as well as local, regional and global perspectives of environmental problems and their solutions;
- Demonstrate the understanding of key concepts about the environment through creative interdisciplinary approach;
- Demonstrate strong analytical ability with an understanding of theoretical and applied knowledge; as well as communication and leadership skills;
- Design environmental assessment studies, plan for environmental policies and strategies and implement natural resources management plans; and
- Respect and care for the environment by cultivating high moral and ethical standards and by playing an active role in their community.

Degree Requirements (92 Credits)

Liberal Arts Curriculum (LAC) **27 cr.**

Core Requirements **31 cr.**
BIO 211, BIO 212, CHM 211, CHM 213, CHM 215, CHM 273, CSC 318, ENS 303, GEO 201, STA 203.

Major Requirements **28 cr.**
ENS 201, ENS 323, ENS 324, ENS 325, ENS 430, ENS 450, ENS 490, ENS 491 or ENS 471.

Choose 2 courses of the following (6 cr.):
GEO 311, GIS 311, CHM 415, CHM 416, ENS 206, ENS 312, ENS 322, ENS 420, ENS 422, ENS 423, ENS 424, ENS 425, ENS 431, ENS 440, ENS 441, ENS 445, ENS 451, ENS 475, ENS 485, ENS 495.

Free Electives **6 cr.**

Minor in Environmental Science (16 credits)

The mission of the Environmental Science minor program at NDU is to provide high quality education through a rigorous interdisciplinary approach. The minor program emphasizes the study of interactions between environmental processes and human behavior in addition to environmental problem solving.

Curriculum requirements
Students enrolled in the minor in Environmental Science must complete 16 credits, as follows:

- BIO 211
- ENS 201
- ENS 202 or ENS 203
- ENS 323 or ENS 324 or ENS 430
- 3 cr. from the pool:
  GIS 211 or CSC 318, GEO 201, ENS 420, ENS 206, ENS 312, ENS 450

Undergraduate Courses: Environmental Science

ENS 201 Introduction to Environmental Science (3.0); 3 cr. This course is an introduction to the basic environmental global problems facing the Earth with emphasis on pollution and the use of energy resources.

ENS 202 The Environment and Sustainable Development (3.0); 3 cr. This course is an introduction to the principles and goals of sustainable development. Special focus is given to population growth, food production, energy consumption, environmental protection and natural resources management, as well as the emerging technological applications and their impacts. In addition, multiple case studies present the efforts/ practices of international organizations, regional cooperation and local institutions in sustainable development, conversation and conflicts resolution will be studied.

ENS 203 Biodiversity (3.0); 3 cr. This course explores life's diversity, from genes to ecosystems. It emphasizes the benefits, threats and conservation strategies of biodiversity. This course uniquely prepares students for a future in environmental sciences and conservation.

ENS 205 Environment, Society and Ethics (3.0); 3 cr. This course is an introduction to the environmental goods and services. Impacts of population growth and economic development on the environment, the evolution of societies, community organizations and the quality of life are presented. Special focus is given to the value types and existing moral relationships between human beings and their environment, environmental ethics views, their evolution and effects on the environment and wildlife protection. Sustainability principles and the impacts of international policies, environmental management worldviews and legally binding agreements on natural resources, societies and the world's economic balance are emphasized.

ENS 206 Ecotourism (3.0); 3 cr. This course covers principles, characteristics, and organization. Sustainability based on environmental protection, conservation and beneficial community and social interests are also studied. International experience, domestic ecotourism will also be covered and include description and geography. Field trips to the major nature reserves and sites of natural beauty in Lebanon will be conducted.

ENS 303 Ecology (3.0); 3 cr. This course covers principles of ecosystems, the interaction of organisms & their environment, the food web, energy flow & nutrient cycling in ecosystems will also be studied. Factors which affect the distribution & abundance of species such as wildlife resources & extinction will be discussed. *Prerequisite:* BIO 212; also listed as BIO 314.

ENS 312 Environmental Health (3.0); 3 cr. This course provides general understanding of how environmental factors are involved in the transmission of communicable diseases. It also covers health hazards resulting from exposure to chemical and physical factors in the environment are emphasized as well.

ENS 323 Air Pollution (3.0); 3 cr. This course covers the composition of the atmosphere, climate and weather, global atmospheric changes, indoor and outdoor air pollution, air pollution control processes, and air pollutants dispersion modeling. *Prerequisite:* ENS 201.

ENS 324 Soil and Water Pollution - (3.0); 3 cr. The course provides an understanding of the contaminants of soil and water systems. It covers various aspects of the physical degradation of soil and the hydrogeology

of pollutants. The impact of the pollutants on human health and ecosystem are also discussed. *Prerequisite:* ENS 201.

ENS 325 Environmental Science Laboratory - (1.2); 2 cr. This course introduces students to sampling and analytical methods used in environmental science. It covers the quality criteria of environmental samples as well as the determination of common contaminants in soil, water and air samples. Experimental data reporting, statistical analysis and scientific interpretation of results are enhanced.

ENS 332 Plants and Pollution (3.0); 3 cr. Biomes on Earth. Loss of biodiversity and desertification. Preventive measures. Forest resources and conservation. Interaction between plants and pollution, plant pollutant uptake and physiological responses. *Prerequisite:* BIO 212.

ENS 420 Energy Resources (3.0); 3 cr. Fossil fuels energy resources. Mineral resources. Alternative energy resources. Technological hazards and environmental impacts including political, economic and social consequences of their exploitation.

ENS 422 Pollution of Marine Environment, (3.0); 3 cr. This course is an introduction to the marine ecosystems, sources and types of pollutants, environmental degradation and its impact. Marine pollution management. International legislation for the conservation of marine environment will also be studied.

ENS 423 Water and Wastewater Quality and Treatment (3.0); 3 cr. Water and wastewater treatment processes will be studied in this course as well as consequent health impacts, water and wastewater control techniques, and water protection.

ENS 424 Conservation Biology (3.0); 3 cr. The application of biological principles to issues in the conservation biology will be examined within a context that integrates biology, land management, protection and development. *Prerequisite:* ENS 303; also listed as BIO 424.

ENS 425 Forest Resource Conservation (3.0); 3 cr. This course will cover ecological, social, and economic principles applied in the management of forest and wildland resources, forests, range, water, fish and game. Evaluation of alternate management plans and the introduction to integrative planning will also be discussed such as the, interactions of water, wood, wildlife, range fisheries, and recreation resources. *Prerequisite:* BIO 212.

ENS 430 Solid Waste Management (3.0); 3 cr. This course will cover solid waste management and disposal, and treatment processes such as recycling, composting, landfilling as well as the introduction to hazardous/toxic waste.

ENS 431 Industrial Waste Management (3.0); 3 cr. This course will cover industrial waste such as: sources, types, quality, quantity and impact assessment. Treatment processes and detoxification and disposal will also be discussed.

ENS 440 Environmental Natural Hazards (3.0); 3 cr. This course covers seismic hazards, volcanoes, atmospheric hazards, floods and Hydrologic hazards, landslides and rockfalls, design with nature, human interaction with the environment, risk maps, and case studies.

ENS 441 Mitigation Measures and Policies (3.0); 3 cr. This course covers rehabilitation concepts, mitigation procedures, design, and methodology, application to quarries, landfills, coastal erosion, landslides, and floods.

ENS 445 Environmental Law and Regulations (3.0); 3 cr. Overview of National and international environmental law and regulations, enforcement and liability, regulatory agencies, and working bodies.

ENS 450 Environmental Impact Assessment (3.0); 3 cr. The assessment of a project environmental limitations, precautions, mitigation, legal measures and the various methodologies of technical investigation, monitoring and assessment.

ENS 451 Environmental Biotechnology (3.0); 3 cr. The use of biotechnology as it relates to various environmental technologies will be studied and includes: biodegradation, remediation, biodegradable materials, energy saving process, and chemical production from renewable resources. *Prerequisites:* BIO 211, BIO 212.

ENS 471 Field and Laboratory Work (0.4); 2 cr. This course covers the investigation of polluted sites and risk assessments, environmental field work, sampling methods, and laboratory analysis.

ENS 475 Selected Topics in Environmental Science (3.0); 3 cr. Students study recent and current environmental issues and topics in the area of specific competence of the course instructor (or groups of instructors). *Prerequisite:* Senior Standing.

ENS 485 Seminar; 2 cr. Students work on selected papers from recent biological, earth, and environmental science journals under the supervision of an advisor. *Prerequisite:* Senior Standing.

ENS 490 Senior Project (3.0); 3 cr. After consultation with the department, students run an environmental research project (case study) that will be presented as a seminar.

ENS 491 - Internships in Environmental Science - (0.4); 2 cr. Students opt for an internship to translate the acquired environmental-related knowledge into practical experience in a company, governmental, or non-governmental organization. This aims at broadening students' understanding in the field while connecting their undergraduate studies with potential career opportunities. Students can secure their own internships or seek assistance from the program advisor.

ENS 495 Research in Environmental Science; 1, 2 or 3 cr. This course is based on an independent research project in an area of environmental science under the direction of a faculty mentor. *Prerequisite*: Senior Standing and consent of the instructor.

Undergraduate Courses: Geology

GEO 101 Environmental Geology (3.0); 3 cr. This is an introductory course of the study of the earth covering: how the earth works, the major geologic processes as earthquakes and volcanoes, how they influence human activities and the geologic aspect of environmental pollution. *Prerequisite:* Freshman Standing.

GEO 201 Physical Geology (3.0); 3 cr. This course covers basic principles of structural and depositional geologic processes, structure of the Earth, minerals, rocks and soils, minerals and rocks identification, And geological maps interpretation. *Prerequisite:* Sophomore Standing.

GEO 203 Planet Earth (3.0); 3 cr. This course covers basic principles of the Earth's composition such as: structure and age, the Earth's processes including Earthquakes and volcanoes, the Earth's materials like minerals, rocks, soils and groundwater, as well as the applications from the major geological aspects in Lebanon. *Prerequisite:* Sophomore Standing.

GEO 311 Hydrogeology (3.0); 3 cr. This course covers the hydrologic cycle, meteorology, groundwater resources and uses, groundwater movement, natural and artificial discharge, groundwater erosion and deposition, and Lebanon's water resources.

FACULTY OF NURSING & HEALTH SCIENCES

FNHS

FACULTY DIRECTORY

FACULTY DIRECTORY

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FACULTY PROFILE

FACULTY OF NURSING AND HEALTH SCIENCES (FNHS)

Professors:	Doumit, Jacqueline; Farhat, Antoine.
Associate Professors:	Aoun, Antoine; Bou Mitri, Christelle; El Hayek, Jessy.
Assistant Professors:	El Gerges, Najwa; Ghantous, Crystal; Hayek, Sibelle; Issa, Aline; Merhi, Samar.
Senior Lecturers:	Abou Jaoude, Maya; Obeid, Cecile.

MISSION

The Faculty of Nursing and Health Sciences (FNHS) at Notre Dame University-Louaize (NDU) provides student-centered and quality education in an environment that fosters academic integrity, social justice, and personal responsibility. The FNHS prepares students to become morally reflective health care scholars who provide leadership in evidence-based practice to promote well-being and disease prevention among individuals and communities. Through integrated programs of excellence in education, research, and service, the FNHS contributes to the enhancement of public health in Lebanon and the region by training future health professionals from diverse backgrounds, conducting quality and significant research, and using newly generated knowledge to drive effective public health practice and policy. The Faculty's curricula offer students comprehensive knowledge and clinical experience through supervised practice programs that enable them to assess, plan, implement, and evaluate an adequate therapeutic regimen for clients in different healthcare settings.

HISTORICAL OVERVIEW

NDU submitted its application to the Ministry of Education and Higher Education (MEHE) to establish a Faculty of Nursing along with a Health Sciences (FNHS) component during the academic year 2006-07. Specific requirements, such as the installation and the equipment of Clinical Nursing Labs on Campus, contract agreements with accredited hospitals, qualified administrators, and faculty members in Nursing, were met during Fall 2007-08 and, accordingly, the FNHS was recognized by the MEHE in March 2008 and officially licensed on September 5, 2008. The Bachelor of Science in Nutrition and Dietetics, and in Medical Laboratory Technology, previously managed by the Department of Science at the Faculty of Natural and Applied Sciences (FNAS), were moved to the FNHS starting in Academic year 2008-09. In July 2013, the FNHS obtained the MS in Human Nutrition license and the program started in Fall 2013-14. In July 2014, the BS and MS in Food Safety and Quality Management were licensed and started in Fall 2015-16. In February 2016, the FNHS obtained the license for a BS in Health Communication (one of the first universities in Lebanon to do so).

The Faculty of Nursing and Health Sciences offers the following degree program:

• BS in Food Safety and Quality Management	93 cr.
• BS in Health Communication*	92 cr.
• BS in Medical Laboratory Technology	103 cr.
• Bachelor in Nursing	105 cr.
• BS in Nutrition and Dietetics	97 cr.
• MS in Human Nutrition	35 cr.
• MS in Food Safety and Quality Management	36 cr.

In addition, the Faculty of Nursing and Health Sciences offers:

• Dietetics Internship Program	6 cr.
• Minor in Nutrition	15 cr.
• Minor in Food Safety and Quality Management	15 cr.

Self-Designed Interdisciplinary Minor Program

NDU aims to provide students with the programs they need for their future and offers them the opportunity to design their own Self-Designed Interdisciplinary Minor program. Students who would like to explore this option have to fill in the Minor proposal with the collaboration of the concerned Faculty and Office of the Registrar. For guidelines, rules and regulations of the Self-Designed Interdisciplinary Minor, kindly refer to the Office of the Registrar.

*Not offered at the present time

UNDERGRADUATE DEGREE PROGRAM

Admission Requirements

For admission requirements and undergraduate degree program offered by the FNHS, kindly refer to the section titled, "Undergraduate Admission," of this *Catalog*. For students who want to pursue a BS in Food Safety and Quality Management, applicants must pass the Lebanese Baccalaureate Part II (General Sciences-GS or Life Science-LS) or its equivalent as identified by the Lebanese Ministry of Education and Higher Education (MEHE). An applicant is accepted if he or she fulfills all the University admission requirements. In addition, students with Sociology and Economics-SE or Literature and Humanities-LH Baccalaureates may be assigned MAT 111 as a remedial course in light of their composite score.

Graduation Requirements

For the Bachelor of Sciences in Nutrition and Dietetics, Medical Laboratory Technology and Nursing, to graduate, a student must fulfill all requirements of the undergraduate degree program, with an overall GPA of at least 2.0/4.0 and a minimum GPA of 2.3/4.0 in both the core and major requirements and clear all accounts with the University. Candidates for degrees are reminded that grades of "I" assigned during the last semester to courses required for graduation will result in the delaying of graduation.
For the Bachelor of Sciences in Food Safety and Quality Management and Health Communication, to graduate, a student must fulfill all requirements of the undergraduate degree program, with an overall GPA of at least 2.0/4.0 and a minimum GPA of 2.0/4.0 in both the core and major requirements and clear all accounts with the University. Candidates for degrees are reminded that grades of "I" assigned during the last semester to courses required for graduation will result in the delaying of graduation.

THE DEGREE OF BACHELOR OF SCIENCE IN FOOD SAFETY AND QUALITY MANAGEMENT

Degree Requirements (93 credits)

Mission

The mission of the Bachelor's program in Food Safety and Quality Management (FSQM) is to generate knowledgeable graduates capable of contributing to the supply of safe, sustainable, and wholesome foods from farm to fork. The program will also provide a solid foundation in quality management systems and principles needed to achieve industry-desired objectives. The supervised trainings will ensure that students become competent and qualified food safety and quality professionals enabling them to efficiently manage the supply chain.

Program Educational Objectives (POb)

The program will:

- Equip students with adequate theoretical and practical knowledge on quality and food safety management systems and regulations;
- Translate learned theories into practice through extensive supervised trainings and hands-on experience;
- Assist students in applying basic food science and processing principles into the development and formulation of market-relevant products;
- Prepare students to be effective managers and leaders using evidence-based decision making;
- Foster the acquisition of critical thinking/problem-solving, teamwork, and communication skills required for professional success; and
- Integrate ethical principles and lifelong learning in future professional practice.

Learning Outcomes:

Upon graduation, students should be able to:

- Implement preventive food safety programs and systems such as HACCP and ISO 22000 in a particular food service establishment or a food industry using risk-based thinking **(POb a H);**
- Interpret and apply the national and international food-related laws, regulations, and standards as well as different labeling requirements **(POb c H);**
- Demonstrate managerial and leadership skills that allow them to contribute to a positive food culture as well as to continuous improvement **(POb d H, POb e H, POb f H);**
- Understand the advantages and disadvantages of various food processing and preservation techniques and evaluate their impact on nutrient retention **(POb b H)**;
- Translate professionalism and ethics during implementation and auditing of the quality management system **(POb a H, POb d H, POb e H, POb f H);**
- Understand the physico-chemical properties of food and how they contribute to its quality, safety, as well as the different reasons behind its deterioration **(POb a H, POb b H);**
- Conduct scientific research on a selected food safety or quality-related current topic and present challenges and findings in relation to a practical setup. **(POb a H, POb c W, POb e H, POb f H);**

- Evaluate various local food industries and food service establishments through supervised hands- on experiences **(POb c H, POb d W, POb e W);**
- Create new food products from concept to market **(POb b H);** and
- Assess global trends related to food security and sustainability **(POb a W, POb f H).**

Liberal Arts Curriculum **27 cr.**

Category I. English and Arabic Communication **9 cr.**

A. English Communication 6 cr.

ENL 213 Sophomore Rhetoric 3 cr.

And

ENL 230 English in the Workplace 3 cr.

Or

ENL 223 Communication Arts 3 cr.

Or

ENL 231 Work Ready Now 3 cr.

B. Arabic Communication (One from the following pool) 3 cr.

ARB 211 Appreciation of Arabic Literature
ARB 212 Applied Arabic Grammar
ARB 224 Arabic Literature and Human Thought
ARB 231 Technical Arabic
ARB 306 The Modern Arabic Novel and Short Story
ARB 310 Arabic Theater

Category II. Religion **3 cr.**

REG 212 Religion and Social Issues
REG 213 Catholicism
REG 215 World Religions
REG 313 The Maronites: Faith and Cultural Heritage
REG 314 Marriage and Family in the Catholic Church

Category III. Ethics **3 cr.**

MGT 301 Ethics and Responsible Business

Category IV. Citizenship **3 cr.**

ENS 202 The Environment and Sustainable Development
FQM 200 Food Security and Sustainability
POS 201 Introduction to Political Science
POS 209 Citizenship
POS 210 Government and Politics of Lebanon
POS 240 Law and Society
POS 319 Democracy and Human Rights

Category V. Cultural Studies and Social Science **6 cr.**

A. Cultural Studies

ARP 215 Cultural Themes in Lebanese Architecture
AVF 315 World Cinema Survey
COA 350 Current Issues
FAP 215 Art and Culture
HIT 211 History of Lebanon and the Middle East
HTM 201 Fundamentals of Hospitality and Cultural Tourism
HTM 326 Lebanon's Cultural, Heritage, and Nature Tourism
LIR 214 Introduction to Literary Genres
LIR 217 American Literature to the End of the 19th Century
LIR 305 Novel to the End of the 19th Century
MUS 210 Music Appreciation
NTR 215 Foods and Nutrition of World Cultures
PHL 211 Logic and the Scientific Method
PHL 232 Ancient World Philosophy
PHL 333 Medieval World Philosophy
PHL 334 Modern and Contemporary World Philosophy
POS 225 Politics of Catholic Social Theory
ROC 301 Romance Cultures

B. Social Science

CSC 206 Games and Society 3 cr
ECN 211 Principles of Microeconomics 3 cr.
ECN 212 Principles of Macroeconomics 3 cr.
ENG 210 Introduction to Engineering Economy 3 cr.
ENG 220 Engineering Innovation 3 cr.
MGT 201 Fundamentals of Management 3 cr.
MRK 201 Fundamentals of Marketing 3 cr.
PSL 201 Introduction to Psychology 3 cr.
SOL 201 Introduction to Sociology 3 cr.
SOL 316 Society and Women 3 cr.
SOL 313 Family Violence 3 cr.
SOL 322 Family: Sociological Perspectives 3 cr.
SOL 323 Society and Role of Global Intercultural Communication 3 cr.

Category VI. Applied and Life Sciences **3 cr.**
Faculty Contributions

Life and Natural Sciences

BIO 201 Your Body in Action
HEA 201 Health Awareness
HEA 204 Contemporary Health Issues
CHM 201 Chemistry in Everyday Life
AST 201 Discovering Astronomy
ENS 201 Introduction to Environmental Science
NTR 201 Basic Human Nutrition
ENS 203 Biodiversity

Core Requirements **17 cr.**

BIO 211, CHM 205, CHM 213, CHM 273, NHS 203, PHS 208.

Major Requirements **49 cr.**

NTR 210, NTR 227, NTR313, FQM 320, FQM 321, FQM 322, FQM 325, FQM 425, FQM 280, FQM 324, FQM 380, FQM 415, FQM 420, FQM 423, FQM 427, FQM 470, FQM 475, FQM 496, MGT 429.

Minor in Food Safety and Quality Management (15 credits)

The Minor in Food Safety and Quality Management aims to provide prospective students with the knowledge and skills needed to understand food hazard and their potential risks, their sources, risk analysis, and management processes and strategies used to assure the quality and safety of food products.

Admission requirements

For admission requirements for the Minor in Food Safety and Quality Management, refer to the section titled, *"General Rules and Regulations for Minors at NDU,"* of this *Catalog*.

Graduation requirements

To satisfy the requirements of a Minor in Food Safety and Quality Management, a student must complete the following courses:

NTR 201/NTR 210
FQM 322;
FQM 420;
FQM 427.

One of the following courses:
NTR 313, FBM 313, MGT 429, FQM324, NTR 324, CHE 515, CHM 432, ENS 324, BIO 227

"D" is the passing grade for each course, and the Minor should be completed with an overall GPA of at least 2.0/4.0.

Undergraduate Courses: Food Safety and Quality Management

FQM 200 Food Security and Sustainability (3.0); 3cr. This course covers the basic principles of natural resources management and food security within a global perspective. Food security and social responsibility from the Green Revolution to the current urge for sustainability at all levels, intensive and extensive agricultural systems, research innovation, and pertinent global and national trends are discussed.

FQM 280 Training in Food Establishments I (0.3); 1 cr. This course provides students with supervised training in one of the food service institutions or food industries. *Prerequisite:* Sophomore Standing.

FQM 320 Food Chemistry (2.0); 2 cr. This course covers the chemical composition and physical and sensory properties of foods with an emphasis on the structural considerations of food components (water in foods, lipids, carbohydrates, and proteins), chemicals in foods, browning reactions, and food flavors. *Prerequisite:* CHM 213.

FQM 321 Food Microbiology (3.2); 4 cr. This course covers microorganisms with an emphasis on food spoilage, food poisoning, and the control of pathogenic microorganisms in food. *Prerequisite:* BIO 211.

FQM 322 Food Safety and Quality Management I (3.0); 3 cr. This course covers the basic principles of quality control, quality assurance, food chain security, and quality and safety management in food service establishments and industries with an emphasis on preventive approaches such as HACCP, ISO 22000, Good Manufacturing Practices (GMPs), as well as risk management.

FQM 324 Food Science and Technology (3.0); 3 cr. This course covers the changes in basic constituents of foods (carbohydrates, lipids, proteins, vitamins, minerals, food enzymes, and water) resulting from processing and preparation. It also focuses on the principles of food spoilage and food preservation, and the manufacturing of traditional Lebanese food products. *Prerequisite:* FQM 320.

FQM 325 Food Analysis (1.2); 2 cr. An introduction to laboratory methods for chemical analysis of nutrients and chemicals in food products. *Prerequisite:* CHM 205. *Corequisite:* FQM 320.

FQM 380 Training in Food Establishments II (0.3); 1 cr. This course involves students in supervised advanced training in one of the food service institutions or food industries.

FQM 415 Food Processing Engineering (3.0); 3 cr. The course covers the basic food engineering principles for non-engineering students, with an overview for their application in food processing. The topics to be covered are mass and heat transfer, fluid flow, thermodynamics, mass and energy balances, food process unit operations, and resource sustainability. *Prerequisite:* Senior Standing. *Corequisite:* FQM 425.

FQM 420 Food Safety and Quality Management II (3.0); 3 cr. This course introduces students to the importance of moving towards quality management systems such as ISO 9001 and total quality management (TQM) thinking in food establishments. It highlights the current challenges in food safety management systems and the importance of establishing a strong food safety culture, leadership, and behavior-based food safety management. In addition, this course provides students with tools on how to conduct different types of audit in the food industry. *Prerequisite:* FQM 322.

FQM 423 Principles of food product development (3.0); 3 cr. This course provides students with the tools they need

to learn the chemical and physical properties of food ingredients in order to apply them in the product development process, from idea generation to marketing. *Prerequisites:* FQM 320 and FQM 325.

FQM 425 Food Processing (2.2); 3 cr. This course covers the changes in basic constituents of foods (carbohydrates, lipids, proteins, vitamins, minerals, food enzymes, and water) resulting from processing and preparation, with an emphasis placed on the principles of food spoilage and food preservation, and the different laboratory methods of food processing. *Prerequisite:* FQM 320.

FQM 427 Food Laws and Regulations (3.0); 3 cr. This course covers the importance and development of food legislation, food standards, codes of practice and specification (Codex Alimentarius), formulation of legal food standards (national and international), as well as labeling requirements. It also teaches students how to interpret the content of regulations and use them to support the professional needs in the food industry. *Prerequisite:* Senior standing.

FQM 470 Chemical and Physical Assessment of Food (0.2); 2 cr. This course covers a number of chemical reactions occurring in food during its deterioration and the chemical changes happening during production and processing. The focus will be made on the chemical reactions as well as on the techniques and methods used to measure those changes. *Prerequisites:* FQM 320 and FQM 325.

FQM 475 Food Processing Laboratory (0.3); 1 cr. This course exposes students to various local food industries and food service establishments involved in the food chain. Reports of findings and observations are due after each field trip. *Prerequisite:* FQM 320. *Corequisite:* FQM 425.

FQM 496 Project in Food Safety and Quality Management; 3 cr. This course emphasizes current research in food safety and quality management. *Prerequisites:* Senior Standing and consent of instructor.

HEALTH COMMUNICATION

THE DEGREE OF BACHELOR OF SCIENCE IN HEALTH COMMUNICATION*

Degree Requirements (92 credits)

Mission
The mission of the program is to prepare health communication professionals capable of developing and evaluating effective communication strategies and practices to enable individuals, communities, and the population to achieve better health.

Program Educational Objectives (POb)
The program will:

- Provide students with theoretical knowledge, practical applications, and research skills, to help them develop effective communication strategies that positively influence individual health decisions leading to improved health outcomes and public health;
- Equip students with sufficient quantitative and analytical skills, knowledge of medical terminology, and epidemiological concepts to process and synthesize health-related information accurately and effectively;
- Provide students with the fundamentals of health campaign planning, implementation, and evaluation; and
- Uphold students' attentiveness to integrate ethical principles and socially appropriate health communication practices and schemes in future professional practice.

Program Learning Outcomes:
Upon graduation, students should be able to:

- Employ communication theories, principles, methods, and technology to communicate information, influence audiences, or affect change on health related topics and issues. **(POb a H, POb b W, POb c H, POb d H);**
- Demonstrate the ability to integrate a variety of cognitive skills, including information literacy, analytical inquiry, quantitative literacy, and communicative fluency **(POb a H, POb b H, POb c W);**
- Evaluate the roles of socio-demographics, culture, media, and e-health in building, delivering and evaluating tailored health campaigns/messages to promote health and behavior change. **(POb a H, POb c H, POb d H);**
- Demonstrate the ability to deliver, orally and in writing, clear and concise messages tailored to the characteristics of the specific audience and cultural context. **(POb a H, POb b W, POb c H, POb d H);** and
- Exhibit ethical and socially responsible health communication practices and strategies. **(POb a H, POb c W, POb d H).**

*Not offered at the present time

Liberal Arts Curriculum **27 cr.**

Category I. English and Arabic Communication **9 cr.**

A. English Communication 6 cr.

ENL	213	Sophomore Rhetoric	3 cr.
And			
ENL	230	English in the Workplace	3 cr.
Or			
ENL	223	Communication Arts	3 cr.
Or			
ENL	231	Work Ready Now	3 cr.

B. Arabic Communication (One from the following pool) 3 cr.

ARB	211	Appreciation of Arabic Literature
ARB	212	Applied Arabic Grammar
ARB	224	Arabic Literature and Human Thought
ARB	231	Technical Arabic
ARB	306	The Modern Arabic Novel and Short Story
ARB	310	Arabic Theater

Category II. Religion **3 cr.**

REG	212	Religion and Social Issues
REG	213	Catholicism
REG	215	World Religions
REG	313	The Maronite: Faith and Cultural Heritage
REG	314	Marriage and Family in the Catholic Church

Category III. Ethics **3 cr.**

COA 360 Media Ethics

Category IV. Citizenship **3 cr.**

POS	201	Introduction to Political Science
POS	209	Citizenship
POS	210	Government and Politics of Lebanon
POS	319	Democracy and Human Rights
POS	240	Law and Society
FQM	200	Food Security and Sustainability
ENS	202	The Environment and Sustainable Development

Category V. Cultural Studies and Social Science **6 cr.**

A. Cultural Studies

PHL	211	Logic and the Scientific Method
PHL	232	Ancient World Philosophy
PHL	333	Medieval World Philosophy
PHL	334	Modern and Contemporary World Philosophy
LIR	214	Introduction to Literary Genres
LIR	217	American Literature to the End of the 19th Century
LIR	305	Novel to the End of the 19th Century

ARP 215 Cultural Themes in Lebanese Architecture
FAP 215 Art and Culture
MUS 210 Music Appreciation
HIT 211 History of Lebanon and the Middle East
POS 225 Politics of Catholic Social Theory
HTM 326 Lebanon's Culture, Heritage and Nature Tourism
HTM 201 Fundamentals of Hospitality and Cultural tourism
NTR 215 Foods and Nutrition of World Cultures
AVF 315 World Cinema Survey
COA 350 Current Issues
ROC 301 Romance Cultures

B. Social Science
SOL 201 Introduction to Sociology
SOL 313 Family Violence
SOL 316 Society and Women
SOL 322 Family: Sociological Perspectives
SOL 323 Society and Role of Global Intercultural Communication
PSL 201 Introduction to Psychology
MGT 201 Fundamentals of Management
MRK 201 Fundamentals of Marketing
ECN 211 Principles of Microeconomics
ECN 212 Principles of Macroeconomics
ENG 220 Engineering Innovation
ENG 210 Introduction to Engineering Economy
CSC 206 Games and Society

Category VI. Applied and Life Sciences **3 cr.**
Faculty Contributions

Applied Science
CSC 201 Introduction to Computers
CSC 202 Computers for Visual Arts
CSC 207 Navigating the Age of Artificial Intelligence
ENG 250 Robotics and Society
GIS 211 Principles of Geographical Information Sciences
MIS 201 Management Information System
MAT 203 Everyday Math

Core Requirements **24 cr.**
COA 201, COA 252, HEA 210, HEA 214, JOU 210, NHS 203, NTR 210, STA 202.

Major Requirements **38 cr.**
COA 425, COA362, HEA 310, HEA 314, HEA 320, HEA 330, HEA 430, HEA 434, HEA 480, HEA 490, JOU 310, JOU 323, JOU 350.

Free Electives **3 cr.**

Undergraduate Courses: Health Communication

HEA 210 Introduction to Public Health (3.0); 3 cr. This course provides an overview of the field of public health: the nature and scope of public health, public health principles, analytical methods of public health, determinants of public health (biological, social, and environmental determinants), the relationship of the public health system with the overall health care system, public health agencies/institutions, public health workforce, core functions and public health practice, and public health interventions. The course will host guest speakers and public health practitioners from Lebanon.

HEA 214 Essentials of Human Disease (3.0); 3 cr. This course provides students who have little or no background in the biological sciences with a basic understanding of the pathogenesis, signs and symptoms, diagnosis, procedures, treatment, and prognosis of various common and important diseases and how to identify critical points at which such pathogenesis could either be prevented or interrupted. Infectious, nutritional, metabolic, genetic, and environmental risks and the impact of such risks on various organ systems are thoroughly examined. Students completing this course will acquire a basic understanding of technical medical terminology.

HEA 310 Occupational and Environmental Health (3.0); 3 cr. This course provides students with a basic understanding of occupational and environmental health and its relationship to public health. It covers environmental epidemiology, toxicology, risk communication, water, soil, and air quality, food safety, waste disposal, ionizing and non-ionizing radiation, noise pollution, occupational health, the built environment and health, injury prevention control, environmental policy and regulation, and environmental controversies in public health. Selected cases from Lebanon, the Arab region, and the Middle East will be highlighted. *Prerequisite:* HEA 210, NHS 203.

HEA 314 Health Marketing and Advertising (3.0); 3 cr. This course provides students with a basic understanding of essential concepts, methods, and models of marketing and advertising and how they are being used to increase the effectiveness of public health programs/ interventions. Case studies from diverse health-related settings and contemporary trends in health marketing and advertising as well as emerging research areas will also be covered. *Prerequisite:* HEA 210.

HEA 320 Health Behavior (3.0); 3 cr. This course provides students with a comprehensive coverage of frequently used social and behavioral theories at the individual, interpersonal, and community and group levels that guide our understanding of health-related behavior and form the basis of health promotion and disease prevention efforts. Examines real life examples of how these theories can be put into practice in health promotion and disease prevention efforts. *Prerequisite:* HEA 210.

HEA 330 Health Communication (3.0); 3 cr. An introductory survey of health communication issues, including patient-provider communication, socio-cultural diversity/context and issues in healthcare, communication within healthcare organizations, media and health, risk and crisis communication, new technologies and health communication, health communication ethics, and health communication research. *Prerequisite:* HEA 320.

HEA 430 Health Writing and Reporting (3.0); 3 cr. An introduction to basic techniques of health news writing and reporting. Students will learn how to write clear, accurate, and audience-appropriate health news. The course includes developed discussions

regarding various aspects of writing mechanisms and structures and also ties in practical applications to common writing situations found in the health care setting. Examples include magazine-style features, communications/promotional pieces, new media content (including blogs), news releases, and advocacy pieces. *Prerequisite:* JOU 310. *Corequisite:* HEA 330, COA 425.

HEA 434 Health Campaign Planning: Design & Evaluation (3.0); 3 cr. This course explores the best practices for health campaign design across a variety of media and contexts. Students will apply theoretical concepts to design clear, accurate, and appropriate health campaign messages for a variety of target audiences and to offer recommendations on evaluation research design. *Prerequisite:* HEA 314, HEA 330.

HEA 480 Practicum in Health Communication (0.3); 2 cr. This course places students in practicum settings with health and media organizations, with weekly classroom meetings to cover important writing/reporting/communication issues. Students would spend additional hours each week completing projects for their assigned organizations. *Prerequisite:* HEA 430.

HEA 490 Senior Study in Health Communication (3.0); 3 cr. This course is a synthesis of the major ideas, perspectives, and concepts gained from the study of health communication. Students are required to critically analyze their experiences and integrate knowledge gained throughout the program into a final project. Students prepare a final health communication project that could be a publishable article or series of articles on an important health topic, an original research paper on a dimension of health communication, or a multimedia production on a health issue/problem, aimed at a particular audience. *Prerequisite:* HEA 430.

MEDICAL LABORATORY TECHNOLOGY

THE DEGREE OF BACHELOR OF SCIENCE IN MEDICAL LABORATORY TECHNOLOGY

Degree Requirements (103 credits)

Mission

The mission of the Medical Laboratory Technology (MLT) program is to prepare highly competent medical laboratory technologists who will become leaders in the MLT profession. The program provides qualified students with both the theoretical knowledge and clinical experience in various areas of clinical laboratory science. Students are trained to perform clinical laboratory tests, evaluate, and report accurate test data/results used by physicians to properly diagnose and treat patients. Principles of quality assurance, laboratory safety assurance, and provision of timely and cost-effective services are emphasized. Graduates of the program shall be able to demonstrate high ethical and moral standards, professional responsibility, and the desire for learning throughout their careers.

Program Educational Objectives (POb)

The program will:

- Provide students with comprehensive theoretical knowledge of clinical laboratory sciences and practical experience;
- Develop students' career entry-level competencies in clinical laboratory testing, quality assurance, and professional ethical practice;
- Provide students with the background adequate to follow graduate studies or a specialization in an area of clinical laboratory sciences; and
- Cultivate the development of leadership, communication skills, and learning.

Program Learning Outcomes (W: weak correlation; H: high correlation)

Upon graduation, students should be able to:

- Define the basics and principles of clinical chemistry, general microbiology, clinical hematology, histopathology, blood banking, cytogenetics and molecular laboratory sciences. **(POb a H, POb c H);**
- Establish proper procedures, for collecting, processing, and analyzing biological specimens and other substances. **(POb a H, POb b H, POb c H);**
- Perform microscopic examination and analytical tests of cells, tissues, blood, body fluids, and other materials. **(POb a H, POb b H, POb c H);**
- Employ problem solving and sound critical thinking skills to recognize and confirm abnormal laboratory results. **(POb a H, POb b W);**
- Exercise the principles of management, safety and quality assurance program. **(POb b H);** and
- Demonstrate effective communication, interpersonal skills, professional conduct, and the desire for continuing education. **(POb b H, POb c H, POb d H).**

Liberal Arts Curriculum			**27 cr.**
Category I. English and Arabic Communication			**9 cr.**
A. English Communication			6 cr.
ENL	213	Sophomore Rhetoric	3 cr.
And			
ENL	223	Communication Arts	3 cr.
Or			
ENL	230	English in the Workplace	3 cr.
OR			
ENL	231	Work Ready Now	3 cr.
B. Arabic Communication (One course from the following pool)			3 cr.
ARB	211	Appreciation of Arabic Literature	3 cr.
ARB	212	Applied Arabic Grammar	3 cr.
ARB	224	Arabic Literature and Human Thought	3 cr.
ARB	231	Technical Arabic	3 cr.
ARB	306	The Modern Arabic Novel and Short Story	3 cr.
ARB	310	Arabic Theater	
Category II. Religion			**3 cr.**
REG	212	Religion and Social Issues	3 cr.
REG	213	Catholicism	3 cr.
REG	215	World Religions	3 cr.
REG	313	The Maronite: Faith and Cultural Heritage	3 cr.
REG	314	Marriage and Family in the Catholic Church	3 cr.
Category III. Ethics			**3 cr.**
NUR	203	Introduction to Bioethics	3 cr.
Category IV. Citizenship			**3 cr.**
ENS	202	The Environment and Sustainable Development	3 cr.
FQM	200	Food Security and Sustainability	3 cr.
POS	201	Introduction to Political Science	3 cr.
POS	209	Citizenship	3 cr.
POS	210	Government and Politics of Lebanon	3 cr.
POS	240	Law and Society	3 cr.
POS	319	Democracy and Human Rights	3 cr.
Category V. Cultural Studies and Social Science			**6 cr.**
A. Cultural Studies			
ARP	215	Cultural Themes in Lebanese Architecture	3 cr.
AVF	315	World Cinema Survey	3 cr.
COA	350	Current Issues	3 cr.
FAP	215	Art and Culture	3 cr.
HIT	211	History of Lebanon and the Middle East	3 cr.
HTM	201	Fundamentals of Hospitality and Cultural Tourism	3 cr.
HTM	326	Lebanon's Cultural, Heritage, and Nature Tourism	3 cr.
LIR	214	Introduction to Literary Genres	3 cr.

LIR	217	American Literature to the End of the 19th Century	3 cr.
LIR	305	Novel to the End of the 19th Century	3 cr.
MUS	210	Music Appreciation	3 cr.
NTR	215	Foods and Nutrition of World Cultures	3 cr.
PHL	211	Logic and the Scientific Method	3 cr.
PHL	232	Ancient World Philosophy	3 cr.
PHL	333	Medieval World Philosophy	3 cr.
PHL	334	Modern and Contemporary World Philosophy	3 cr.
POS	225	Politics of Catholic Social Theory	3 cr.
ROC	301	Romance Cultures	3 cr.

B. Social Science 3 cr.

CSC	206	Games and Society	3 cr.
ECN	211	Principles of Microeconomics	3 cr.
ECN	212	Principles of Macroeconomics	3 cr.
ENG	210	Introduction to Engineering Economy	3 cr.
ENG	220	Engineering Innovation	3 cr.
MGT	201	Fundamentals of Management	3 cr.
MRK	201	Fundamentals of Marketing	3 cr.
PSL	201	Introduction to Psychology	3 cr.
SOL	201	Introduction to Sociology	3 cr.
SOL	313	Family Violence	3 cr.
SOL	316	Society and Women	3 cr.
SOL	322	Family: Sociological Perspectives	3 cr.
SOL	323	Society and Role of Global Intercultural Communication	3 cr.

Category VI. Applied and Life Sciences **3 cr.**

Faculty Contributions

CSC	201	Introduction to Computers	3 cr.
CSC	202	Computers for Visual Arts	3 cr.
CSC	207	Navigating the Age of Artificial Intelligence	3 cr.
ENG	250	Robotics and Society	3 cr.
GIS	211	Principles of Geographical Information Sciences	3 cr.
MAT	203	Everyday Math	3 cr.
MIS	201	Management Information Systems	3 cr

Core Requirements **24 cr.**

BIO 211, NHS 205, BIO 227, CHM 205, CHM 213, CHM 215, CHM 273, NHS 203.

Major Requirements **49 cr.**

BIO 222, MLT 311, MLT 314, MLT 318, MLT 320, MLT 321, MLT 322, MLT 325, MLT 327, MLT 329, MLT 330, MLT 339, MLT 340, MLT 400, MLT 410, MLT 420, MLT 430, MLT 440, MLT 450, MLT 460, MLT 470, MLT 480.

Free Electives **3 cr.**

Undergraduate Courses: Medical Laboratory Technology

MLT 311 Clinical Chemistry I (2.0); 2 cr. This course covers concepts of clinical chemistry, mechanisms of diseases, and the correlation of laboratory data with those diseases. Clinical interpretation of normal and abnormal values. *Prerequisite:* CHM 205 or CHM 211.

MLT 314 General Microbiology (3.2); 4 cr. Covers structure, morphology, nutritional requirements, metabolism, and growth of microorganisms, culture techniques, microbial diseases, assays, and introduction to microbial genetics. *Prerequisite:* BIO 211.

MLT 318 Hematophysiology (3.0); 3 cr. This course covers general hematology, including the development and functions of red blood cells, white blood cells, and platelets, coagulation, manual techniques and modern automation. *Prerequisite:* BIO 211.

MLT 320 Clinical Parasitology (3.0); 3 cr. This course covers the parasitic infections of humans of clinical importance and their diagnostic laboratory techniques. *Prerequisite:* BIO 211.

MLT 321 Clinical Mycology (1.0); 1 cr. This course covers fungal infections of humans of clinical importance, modes of infection, methods of identification, and susceptibility testing of fungi. *Prerequisite:* BIO 211.

MLT 322 Clinical Chemistry II (2.0); 2 cr. A continuation of MLT 311. *Prerequisite:* MLT 311.

MLT 325 Clinical Bacteriology (2.0); 2 cr. This course covers bacterial infections of humans of clinical importance, modes of infection, identification methods, and antibiotic susceptibility testing. *Prerequisite:* MLT 314.

MLT 327 Clinical Virology (1.0); 1 cr. This course covers viral infections of humans of clinical importance, modes of infection, methods of identification, and their diagnostic laboratory techniques. *Prerequisite:* MLT 314.

MLT 329 Hematopathology (2.0); 2 cr. This course covers blood cell (erythrocytes, leukocytes, and platelets) disorders and coagulation disorders. *Prerequisite:* MLT 318.

MLT 330 Clinical Histopathology and Cytology Techniques (2.0); 2 cr. This course consists of a series of lectures in cell biology and normal histology of various human tissues. Lectures on techniques of tissue handling, preparation and staining of specimens, and smear of cytological material.

MLT 339 Blood Banking and Transfusion Medicine (1.0); 1 cr. This course covers basic principles in blood banking and transfusion medicine. *Prerequisites:* BIO 222, MLT 318.

MLT 340 Serology (2.0); 2 cr. This course covers basic aspects of clinical serology, which involves the study of mechanisms, different formats, interfering factors, application, and interpretation of commonly used serological tests. *Prerequisites:* BIO 222, MLT 311.

MLT 400 Introduction to Cytogenetics and Molecular Diagnostics (1.0); 1 cr. An introduction to the fields of Cytogenetics and molecular diagnostics. *Prerequisite:* MLT 330.

MLT 410 Practical Training in Clinical Chemistry; 4 cr. A 5-week practical training in clinical chemistry. *Prerequisites:* MLT 311, MLT 322.

MLT 420 Practical Training in Clinical Hematology; 4 cr. A 5-week practical training in clinical hematology. *Prerequisites:* MLT 318, MLT 329.

MLT 430 Practical Training in Clinical Bacteriology; 4 cr. A 5-week practical training in clinical bacteriology. *Prerequisites:* MLT 321, MLT 325, MLT 327.

MLT 440 Practical Training in Clinical Parasitology; 2 cr. A 4-week practical training in clinical parasitology. *Prerequisite:* MLT 320.

MLT 450 Practical Training in Serology; 2 cr. A 4-week practical training in serology. *Prerequisite:* MLT 340.

MLT 460 Practical Training in Blood Banking and Phlebotomy; 2 cr. A 5-week practical training in blood banking and phlebotomy. *Prerequisite:* MLT 339.

MLT 470 Practical Training in Cytogenetics and Molecular Diagnostics; 1 cr. A 1-week practical training in cytogenetics and molecular diagnostics techniques. *Prerequisite:* MLT 400.

MLT 480 Practical Training in Pathology; 1 cr. A 1-week practical training in pathology. *Prerequisite:* MLT 330.

PREMEDICAL COURSE PLANNER

Premedical students majoring in Medical Laboratory Technology are recommended to enroll in CHM 211- Principles of Chemistry instead of CHM 205- Basic Chemistry, and CHM 221- Organic Chemistry I instead of CHM 213-Basic Organic Chemistry, and in PSL 201 and SOL 201 in LAC V.

In addition, students must take the below courses over and above the 99cr. required for MLS graduation.
CHM 222- Organic Chemistry II
PHS 208- Physics for Life Sciences I and PHS 278- Physics for Life Sciences Lab I
PHS 209- Physics for Life Sciences II and PHS 279- Physics for Life Sciences Lab II

NURSING

THE DEGREE OF BACHELOR IN NURSING

Degree Requirements (105 Credits)

Mission

The Bachelor in Nursing program is dedicated and committed to graduate competent nurses who respect cultural diversity, adhere to ethical and professional principles, and deliver high-quality nursing care in collaboration with other health care professionals to clients/patients, families in the community and in health care institutions. This is achieved by fostering quality education and embracing advances in the delivery and management of evidence-based health care vis-à-vis developing leadership, lifelong learning, and research skills. Graduates of the program are prepared for entry into the nursing profession as generalist nurses and are eligible to pursue graduate education in nursing or other health-related fields.

Program Educational Objectives (POb)

The program will:

- Provide students with a comprehensive knowledge in biomedical and nursing sciences combined with adequate clinical training in different health care settings;
- Promote safe and reliable nursing care at the primary, secondary, and tertiary levels in terms of health promotion and maintenance, disease prevention, and rehabilitation of health of individuals, families, and groups within diverse cultural backgrounds;
- Foster the appreciation and the implementation of nursing professional ethical values (compassion, moral integrity, honesty, accountability, etc.) that guide the nursing practice;
- Develop critical thinking, problem-solving, management, and leadership skills among students;
- Cultivate student skills in personal and professional development in order to adapt to practice in a changing and complex health care environment;
- Prepare students for lifelong learning and graduate education in nursing or other health-related field; and
- Prepare graduates to pass national certification examinations.

Program Learning Outcomes

Upon graduation from the Nursing Program, our graduates will be able to:

- Integrate scientific and evidence-based knowledge in nursing care delivery;
- Apply critical thinking and decision making in carrying out the nursing process through the nursing assessment, formulating diagnoses, planning interventions, implementing, and evaluating the outcomes of nursing care;
- Demonstrate competency, flexibility, and confidence, and incorporate professional ethical and legal values into the practice of nursing;
- Communicate effectively with patients, families, communities, and members of the healthcare team to achieve optimal outcomes of care;
- Provide direct care, health promotion, disease prevention, rehabilitation and health education for individuals/groups/society that respect diversity in patient's cultural background, religion, age, gender and socioeconomic circumstances;

- Apply management principles as they relate to the nursing practice and assume a leadership role with clients, peers and health care colleagues;
- Practice nursing with an awareness of changes in the environment affecting the nursing profession and the delivery of care;
- Apply research methods and principles and collaborate in the implementation of research studies aimed at developing professional nursing practice; and
- Demonstrate responsibility, accountability for personal, professional growth and development, and lifelong learning.

Liberal Arts Curriculum **27 cr.**

Category I. English and Arabic Communication **9 cr.**

A. English Communication 6 cr.

ENL 213 Sophomore Rhetoric 3 cr.

And

ENL 230 English in the Workplace 3 cr.

Or

ENL 223 Communication Arts 3 cr.

Or

ENL 231 Work Ready Now 3 cr.

B. Arabic Communication (One from the following pool) 3 cr.

ARB 211 Appreciation of Arabic Literature
ARB 212 Applied Arabic Grammar
ARB 224 Arabic Literature and Human Thought
ARB 231 Technical Arabic
ARB 306 The Modern Arabic Novel and Short Story
ARB 310 Arabic Theater

Category II. Religion **3 cr.**

REG 212 Religion and Social Issues
REG 213 Catholicism
REG 215 World Religions
REG 313 The Maronite: Faith and Cultural Heritage
REG 314 Marriage and Family in the Catholic Church

Category III. Ethics **3 cr.**

NUR 203 Introduction to Bioethics

Category IV. Citizenship **3 cr.**

POS 201 Introduction to Political Science
POS 209 Citizenship
POS 210 Government and Politics of Lebanon
POS 319 Democracy and Human Rights
POS 240 Law and Society
FQM 200 Food Security and Sustainability
ENS 202 The Environment and Sustainable Development

Category V. Cultural Studies and Social Science **6 cr.**

A. Cultural Studies

PHL 211 Logic and the Scientific Method
PHL 232 Ancient World Philosophy
PHL 333 Medieval World Philosophy
PHL 334 Modern and Contemporary World Philosophy
LIR 214 Introduction to Literary Genres
LIR 217 American Literature to the End of the 19th Century
LIR 305 Novel to the End of the 19th Century

ARP 215 Cultural Themes in Lebanese Architecture
FAP 215 Art and Culture
MUS 210 Music Appreciation
HIT 211 History of Lebanon and the Middle East
POS 225 Politics of Catholic Social Theory
HTM 326 Lebanon's Culture, Heritage and Nature Tourism
HTM 201 Fundamentals of Hospitality and Cultural Tourism
NTR 215 Foods and Nutrition of World Cultures
AVF 315 World Cinema Survey
COA 350 Current Issues
ROC 301 Romance Cultures

B. Social Science
SOL 201 Introduction to Sociology
SOL 313 Family Violence
SOL 316 Society and Women
SOL 322 Family: Sociological Perspectives
SOL 323 Society and Role of Global Intercultural Communication
PSL 201 Introduction to Psychology
MGT 201 Fundamentals of Management
MRK 201 Fundamentals of Marketing
ECN 211 Principles of Microeconomics
ECN 212 Principles of Macroeconomics
ENG 220 Engineering Innovation
ENG 210 Introduction to Engineering Economy
CSC 206 Games and Society

Category VI. Applied and Life Sciences **3 cr.**
Faculty Contributions

Life and Natural Sciences
BIO 201 Your Body in Action
HEA 201 Health Awareness
HEA 204 Contemporary Health Issues
NTR 201 Basic Human Nutrition
AST 201 Discovering Astronomy
ENS 201 Introduction to Environmental Science
CHM 201 Chemistry in Everyday Life
ENS 203 Biodiversity

Core Requirements **17 cr.**
BIO 207, BIO 216, BIO 219, NHS 203, NHS 204, NHS 205.

Major Requirements **58 cr.**
NUR 201, NUR 206, NUR 308, NUR 311, NUR 312, NUR 313, NUR 319, NUR 320, NUR 323, NUR 324, NUR 325, NUR 326, NUR 402, NUR 403, NUR 404, NUR 405, NUR 406, NUR 407, NUR 408, NUR 409, NUR 410, NUR 400.

Free Electives **3 cr.**
Students are encouraged to take PES 348 or CSC 201.

Undergraduate Courses: Nursing

NUR 201 Fundamentals in Nursing (3.2); 4 cr. An introduction to the basic concepts of nursing. This course uses the nursing process as the organizing framework to examine concepts of health, nursing, client, and environment. Students are also introduced to concepts and interventions central to the nursing practice. Performance of basic client care is emphasized, along with the rationale for nursing interventions to promote and restore health.

NUR 203 Introduction to Bioethics (3.0); 3 cr. An introduction to the basic principles and guidelines of bioethical issues. Moral problems arising in the delivery of health care are addressed within the ethical context.

NUR 206 Health Assessment across the Life Span (1.0); 1 cr. This course provides students with the knowledge and skills needed to assess the physical, psychosocial, and cultural health status of individuals from infancy to old age in order to identify normal and abnormal findings.

NUR 313 Pharmacology for Nursing (3.0); 3 cr. This course focuses on the study of basic concepts in pharmacology and introduces students to the different groups of therapeutic drugs used in professional nursing. It also introduces the role and responsibilities of professional nurses in the administration of medication.

NUR 308 Community and Public Health Nursing - Theory (2.0); 2 cr. This course presents the theories and concepts of health care in the community, the different nursing roles in community health, and the various legal, social, and environmental issues affecting community health.

NUR 311 Adult Health Nursing I - Theory (4.0); 4 cr. This course develops the knowledge and application of scientific principles in the care of adults presenting medical-surgical problems. It builds on the holistic approach to nursing care of the client through the application of the nursing process.

NUR 312 Adult Health Nursing I - Clinical (0.12); 4 cr. This course gives students the opportunity to apply the concepts and principles stated in NUR 311 in a clinical setting. *Corequisite:* NUR 311.

NUR 319 Community and Public Health Nursing - Clinical (0.9); 3 cr. This course focuses on individual, family, and community responses to actual or potential health problems. Health promotion, disease prevention, and care of clients with long-term illnesses are addressed. The clinical nursing process is used to determine the appropriate intervention in cooperation with team workers. *Corequisite:* NUR 308.

NUR 320 Legislation in Nursing (1.0); 1 cr. This course provides an understanding of the legal issues related to the nursing profession, and gives students awareness and discernment in the process of performance within the health system, with a particular emphasis placed on Lebanon.

NUR 323 Adult Health Nursing II - Theory (2.0); 2 cr. This course is a continuation of NUR 311 with an emphasis on dysfunctions related, among others, to metabolic, endocrine, neurologic, rheumatic, and chronic conditions. *Prerequisite:* NUR 311.

NUR 324 Adult Health Nursing II - Clinical (0.6); 2 cr. This course gives students the opportunity to implement the concepts stated in NUR 323 in a variety of settings. *Corequisite:* NUR 323.

NUR 325 Critical Care Nursing - Theory (2.0); 2 cr. This course emphasizes the care of clients with critical health problem such as cardiovascular and respiratory problems, neurologic disturbances, shock, sepsis, metabolic and endocrine imbalances, altered nutrition, renal failure, and emergency and disaster nursing. *Prerequisite:* NUR 311.

NUR 326 Critical Care Nursing - Clinical (0.6); 2 cr. This course emphasizes the application of knowledge related to the care of clients with critical health problems such as cardiovascular and respiratory problems, neurologic disturbances, shock, sepsis, metabolic and endocrine imbalances, altered nutrition, renal failure, and emergency and disaster nursing in clinical settings. *Corequisite:* NUR 325.

NUR 400 E-Health (1.0); 1 cr. This course will introduce students to the field of health informatics. Nursing students will learn about their role in implementing patient care in a context of advancing ICT. Students will critically evaluate the health information system and their role in patient safety, safe medication administration, maintenance of patient privacy, data security, and the efficacy of health care processes.

NUR 402 Obstetric Nursing - Theory (3.0); 3 cr. This course will focus on the nursing care of women during the maternity cycle and the care of newborn infants, taking into consideration the physical, psychological, and emotional needs during the pregnancy and post-partum periods.

NUR 403 Obstetric Nursing - Clinical (0.9); 3 cr. This course emphasizes the implementation of nursing concepts and processes in maternal and neonatal care units. *Corequisite:* NUR 402.

NUR 404 Pediatric Nursing - Theory (3.0); 3 cr. This course presents theories and concepts associated with the response of children to acute and chronic illnesses, with emphasis placed on the child's growth and development in relation to illness. The impact of developmental variables from infancy to adolescence is integrated throughout the course.

NUR 405 Pediatric Nursing - Clinical (0.9); 3 cr. This course focuses on the application of the theory of pediatric nursing in the clinical process for a variety of settings, using the nursing interventions in the care of children and their families to help them in coping with acute and chronic health problems. *Corequisite:* NUR 404.

NUR 406 Psychiatric and Mental Health Nursing - Theory (3.0); 3 cr. This course introduces students to principles and concepts associated with psychiatric and mental health nursing, and to the care of individuals and families with acute and chronic mental health problems.

NUR 407 Psychiatric and Mental Health Nursing - Clinical (0.9); 3 cr. This course focuses on the application of the nursing processes regarding the interventions in the clinical setting on patients suffering from acute and long-term mental health problems. Special emphasis is placed on assessing, planning, and establishing a nurse-patient therapeutic relationship in collaboration with the multidisciplinary health team. *Corequisite:* NUR 406.

NUR 408 Leadership and Management in Nursing - Theory (3.0); 3 cr. This course focuses on the theories, concepts, and modalities of leadership and management in nursing. It will assist students in understanding the professional role of the nurse as a potential leader in various areas of health care.

NUR 409 Leadership and Management in Nursing - Clinical (0.9); 3 cr. This course enables students to make the transition from a dependent role as a student to a relatively independent role as a nurse-leader

by observing, assisting, and practicing the different modalities and skills of leadership and management in a variety of health care settings. *Corequisite:* NUR 408.

NUR 410 Nursing Research (3.0); 3 cr. This course introduces students to the scientific research scientific process and its application to nursing. Emphasis is placed on the basic research steps towards the assessment and evaluation of data and the potential use of the findings.

NUR 411 Nursing Practicum (0.3); 1 cr. This course provides students with opportunities to advance their nursing skills in a select clinical area.

NUTRITION AND DIETETICS

THE DEGREE OF BACHELOR OF SCIENCE IN NUTRITION AND DIETETICS

Degree Requirements (97 credits)

Mission
The mission of the Nutrition program is to prepare competent entry-level licensed dietitians, highly qualified nutrition professionals who will contribute to the enhancement of the health of the general population through provision of evidenced-based nutritional education and counseling, while demonstrating high ethical standards.
The program provides graduates with high quality education and supervised practical experience to meet the need for licensed dietitians in Lebanon and beyond. In addition, the learning environment is structured to promote an appreciation for lifelong learning, research, and for service to the community and profession.

Program Educational Goals and Objectives (POb)
The two overall program goals and the associated objectives are listed below

- **Program Goal 1:**
  Goal #1 – Prepare graduates to become knowledgeable, competent entry-level nutrition and dietetics professionals to meet the employment needs in Lebanon and beyond.

Program Objectives for Goal 1:

- Eighty percent (80%) of students admitted to the Nutrition and Dietetics Coordinated Program will successfully complete the program and receive a verification statement within four and a half years after enrollment (150% of the program length);
- Seventy percent (70%) of the Nutrition and Dietetics Coordinated Program graduates are expected to take the Lebanese colloquium exam within twelve months of completing the program;
- Eighty percent (80%) of the Nutrition and Dietetics Coordinated Program graduates will successfully pass the Lebanese colloquium exam within one year following the first attempt;
- At least seventy percent (70%) of graduates will indicate on an alumni survey they are satisfied or above with the quality of their preparation for professional entry-level practice at NDU; and
- At least seventy five percent (75%) of employers responding to a survey on program graduates in their first year of employment will report graduates of the NDU Nutrition and Dietetics Coordinated Program preparation for entry-level practice as satisfactory or higher as compared to other entry-level licensed dietitians/nutritionists.

- **Program Goal 2:**
Goal #2 – Prepare graduates who will demonstrate lifelong learning, effective professional skills, attributes, and a commitment to ethically servicing the community and the profession.

Program Objectives for Goal 2:

- At least fifty percent (50%) of graduates will attend continuing education opportunities within 18 months after graduation;
- At least fifty percent (50%) of graduates who have sought higher education will pursue an advanced degree within 18 months after graduation;
- Fifty percent (50%) of the Nutrition and Dietetics Coordinated Program graduates who seek employment will be working in the field of nutrition and dietetics or related positions within 12 months of graduation in Lebanon and beyond; and
- At least seventy five percent (75 %) of employers responding to a survey on program graduates in their first year of employment will report graduates' preparation for entry-level practice in term of professional skills and attributes as satisfactory or higher as compared to other entry-level licensed dietitians/nutritionists.

Liberal Arts Curriculum **27 cr.**

Category I. English and Arabic Communication **9 cr.**

ENL	213	Sophomore Rhetoric	3 cr.
		And	
ENL	223	Communication Arts	3 cr.
		Or	
ENL	230	English in the Workplace	3 cr.
		Or	
ENL	231	Work Ready Now	3 cr.

B. Arabic Communication (one course from the following pool 3 cr.

ARB	211	Appreciation of Arabic Literature	3 cr.
ARB	212	Advanced Arabic Grammar	3 cr.
ARB	224	Arabic Literature and Human Thought	3 cr.
ARB	231	Technical Arabic	3 cr.
ARB	306	The Modern Arabic Novel and Short Story	3 cr.
ARB	310	Arabic Theater	3 cr.

Category II. Religion **3 cr.**

REG	212	Religion and Social Issues	3 cr.
REG	213	Catholicism	3 cr.
REG	215	World Religions	3 cr.
REG	313	The Maronites: Faith and Cultural Heritage	3 cr.
REG	314	Marriage and Family in the Catholic Church	3 cr.

Category III. Ethics **3 cr.**

NUR	203	Introduction to Bioethics	3 cr.

Category IV. Citizenship **3 cr.**

ENS	202	The Environment and Sustainable Development	3 cr.
FQM	200	Food Security and Sustainability	3 cr.
POS	201	Introduction to Political Science	3 cr.
POS	209	Citizenship	3 cr.
POS	210	Government and Politics of Lebanon	3 cr.
POS	240	Law and Society	3 cr.
POS	319	Democracy and Human Rights	3 cr.

Category V. Cultural Studies and Social Science **6 cr.**

PSL	201	Introduction to psychology	3 cr.
MGT	201	Fundamentals of Management	3 cr.

Category VI. Applied and Life Sciences **3 cr.**
Faculty Contributions

CSC	201	Introduction to Computers	3 cr.
CSC	202	Computers for Visual Arts	3 cr.
CSC	207	Navigating the Age of Artificial Intelligence	3 cr.
ENG	250	Robotics and Society	3 cr.
GIS	211	Principles of Geographical Information Sciences	3 cr.
MAT	203	Everyday Math	3 cr.
MIS	201	Management Information Systems	3 cr.

Core Requirements **18 cr.**
BIO 211, NHS 203, NHS 205, CHM 205, CHM 213, CHM 270, CHM 273.

Major Requirements **52 cr.**
NTR 210, NTR 227, NTR 282, NTR 313, NTR 320, NTR 321, NTR 324, NTR 325, NTR 330, NTR 336, NTR 360, NTR 381, NTR 425, NTR 430, NTR 435, NTR 440, NTR 441, NTR 452, NTR 460, NTR 470, NTR 496.

Dietetics Internship Certificate Program (6 credits)

The Dietetics Internship Program (DIP), NTR 580 or NTR 585/586, is open to holders of a BS in Nutrition and Dietetics interested in pursuing postgraduate hospital training primarily for the purpose of fulfilling eligibility criteria to sit for the National Colloquium Examination. The latter is a must for graduates in Nutrition and Dietetics to obtain the license to practice the profession of dietetics in Lebanon. The DIP gives the opportunity to accepted candidates to undergo supervised training for a period of 6 months at an affiliated hospital. Upon successful completion of training, applicants would be issued a certificate.

Minor in Nutrition (15 credits)

The Minor in Nutrition covers the composition of food, specific nutrient requirements in the diet, their physiological functions in the body, and the consequences of food processing and nutrients deficiency.

Admission requirements
For admission requirements for the Minor in Nutrition, refer to the section titled, "*General Rules and Regulations for Minors at NDU,*" of this *Catalog*.

Graduation requirements
To satisfy the requirements of a Minor in Nutrition, a student must complete the following courses:

- NTR 201 or NTR 210;
- NHS 205;
- NTR 435; and
- Two of the following courses: NTR 313, NTR 330 or NTR 452.

"D" is the passing grade for each course, and the Minor should be completed with an overall GPA of at least 2.0/4.0.

Undergraduate Courses: Nutrition and Dietetics

NTR 101 Nutrition Concepts and Controversies (3.0); 3 cr. An introduction to fundamental concepts and principles of nutrition by exploring current nutritional issues of relevance to their lives. This course will provide students with insight to the evaluation of the nutritional information promoted in the news. It will also illustrate the six classes of nutrients: carbohydrates, lipids, proteins, vitamins, minerals, and water, their basic functions, and their roles in the body.

NTR 201 Basic Human Nutrition (3.0); 3 cr. An introduction to the study of carbohydrates, fats, proteins, vitamins, and minerals and their effects on health, with an overview of the processes of digestion, absorption, and their metabolism. *Prerequisites:* Sophomore Standing. Not open to students who took NTR 101.

NTR 210 Human Nutrition and Controversies in Nutrition (3.0); 3 cr. This course covers the study of macro- and micronutrients and their roles in the body, as well as the nutritional needs of an individual throughout their lifespan. *Passing grade for majors:* "C."

NTR 215 Foods and Nutrition of World Cultures (3.0); 3 cr. This course enhances the student's basic understanding of the cultural factors that influence food intake and nutritional status. Food and diet patterns of various culture groups will be explored through lectures, food preparation, food sampling, and guest speakers.

NTR 227 Nutritional Biochemistry (3.0); 3 cr. This course covers general biochemistry, with an emphasis on the biochemical functions of nutrients and their metabolism. *Prerequisites:* BIO 211, NTR 210. *Corequisite:* CHM 213.

NTR 282 Clinical Nutrition Shadowing Internship; 1 cr. This course offers a shadowing experience to introduce prospective students to the profession of dietetics and the responsibilities associated with the dietetic professional practice.

NTR 313 Foodservice Management (3.0); 3 cr. This course focuses on planning and service of safe, nutritionally balanced meals within budgetary margins as well as technical operations in a foodservice system. It includes regulations and standards, as well as the basics of total quality management in health care and other institutions. *Prerequisite:* NTR 201 or NTR 210. *Passing grade for majors:* "C."

NTR 320 Food Chemistry (2.0); 2 cr. This course covers the chemical composition, physical, and sensory properties of foods, with an emphasis on the structural considerations of food components (water in foods, lipids, carbohydrates, and proteins), chemicals in foods, browning reactions, and flavor of foods. *Prerequisite:* CHM 213.

NTR 321 Food Microbiology (3.2); 4 cr. This course covers microorganisms with an emphasis on food spoilage, food poisoning, and the control of pathogenic microorganisms in food. *Prerequisite:* BIO 211.

NTR 324 Food Science (3.0); 3 cr. This course covers the changes in basic constituents of foods (carbohydrates, lipids, proteins, vitamins, minerals, food enzymes, and water) resulting from processing and preparation. It also covers the principles of food spoilage and food preservation, and the manufacturing of traditional Lebanese food products. *Prerequisite:* NTR 320.

NTR 325 Food Analysis (1.2); 2 cr. An introduction to laboratory methods for the chemical analysis of nutrients and chemicals in food products. *Prerequisite:* CHM 205. *Corequisite:* NTR 320.

NTR 330 Community Nutrition (3.0); 3 cr. This course focuses on community nutrition education program in schools, health centers, government institutions, and mass media, with emphasis placed on current research in assessing community nutrition program needs as well as program implementation. *Prerequisite:* NTR 201 or NTR 210. *Passing grade for majors:* C.

NTR 336 Nutrition and Sports (2.0); 2 cr. This course provides in-depth coverage of both nutrition and exercise physiology while delivering practical, applied information useful to provide dietary and training guidelines for different kinds of sports. *Prerequisites:* NTR 210, NHS 205.

NTR 360: Quantity Food Production (1.1); 2 cr. This course provides laboratory experience in quantity food production, planning, delivering, managing food service activities, and evaluating/interpreting a budget. *Prerequisite:* NTR 313

NTR 381 Practicum (1.0) 1cr. This practicum experience introduces prospective students to the profession of Dietetics and to the responsibilities associated with the dietetic professional practice. Emphasis is placed on exploring career options in dietetics and preparation for a dietetic internship.

NTR 425 Food Processing (2.2); 3 cr. This course covers the changes in basic constituents of foods (carbohydrates, lipids, proteins, vitamins, minerals, food enzymes, and water) resulting from processing and preparation, with an emphasis placed on the principles of food spoilage and food preservation, and the different laboratory methods of food processing. *Prerequisite:* NTR 320.

NTR 430 Advanced Human Nutrition and Metabolism (3.0); 3 cr. This course covers human physiological needs, how food groups covers the body's needs such as carbohydrates, proteins, and fats, control of nutrient metabolism, and methods of nutritional assessment. *Prerequisites:* NTR 227, NHS 205. *Passing grade for majors:* "C."

NTR 435 Nutrition in the Life Cycle (3.0); 3 cr. This course covers the basic nutritional needs of people throughout their life cycle (infancy, childhood, adolescence, adulthood, and old age) and the special nutritional requirements during pregnancy and lactation. *Prerequisites:* NTR 210, NHS 205. *Passing grade for majors:* "C."

NTR 440 Medical Nutrition Therapy MNT and menu planning (3.2); 4 cr. Covers the nutritional needs of individuals throughout their life cycle and in various diseases. Provides the students with an understanding of how nutritional status is assessed in relation to health and disease at the individual and community levels by covering case study reports and study modules. *Prerequisite:* NTR 430. *Passing grade for majors:* "C."

NTR 441 Medical Nutrition Therapy II (2.0); 2 cr. This course outlines medical nutrition therapy of selected metabolic, respiratory, and neurological diseases, cancers, and food allergies. It also covers nutritional care during pregnancy and lactation. *Prerequisite:* NTR 430. *Passing grade for majors:* "C."

NTR 452 Dietetics Counseling and Communication (3.0); 3 cr. This course covers the application of the principles of dietetics counseling in hospital and clinical settings. Emphasis is placed on the techniques of behavior modification, counseling, dietary intake evaluation, team concepts of patient care, and strategies for promoting change in nutritional education. *Prerequisite:* Senior Standing. *Passing grade for majors:* "C."

NTR 460 Medical Nutrition Therapy Practicum (1.3); 2 cr. A case study evaluation of selected topics in advanced therapeutic nutrition and related current pertinent research. *Prerequisite:* NTR 470. *Passing grade for majors:* "C."

NTR 470 Dietetics Counseling and Communication Lab (0.2); 1 cr. This course covers anthropometric measuring techniques and dietary intake evaluation and computations as well as individualized practical nutritional evaluation and dietary intervention of a selected patient. *Corequisite:* NTR 452. *Passing grade for majors:* "C."

NTR 496 Senior Project in Nutrition; 2 cr. This course explores research in nutrition and dietetics. *Prerequisite:* Senior Standing.

NTR 580 Dietetics Internship; 6 cr. Supervised dietetic training for a period of 6 to 9 months at an affiliated hospital. *Prerequisite:* BS in Nutrition & Dietetics. Undergraduate status.

NTR 585 Dietetic Practicum (5.0); 5 cr. A Supervised Practice (SP) experience, in the clinical setting with an emphasis on nutritional care through systematic assessment, planning, intervention, and evaluation for individuals with alterations in health status using current research and methods in dietetics and incorporating computer and technologies in patient care. *Prerequisite:* BS in Nutrition and Dietetics/ Completion of all Nutrition undergraduate courses.

NTR 586 Seminar in Clinical Dietetics (1.0); 1 cr. This course involves in-depth readings, group discussions and presentation of case studies from clinical experience for students undergoing the Dietetics internship. *Corequisite:* NTR 585.

*****In case of following the Coordinated Program in Nutrition and Dietetics, the Dietetics Internship (NTR 585/586) will be embedded in the course program.**

Undergraduate Faculty Courses

HEA 201 Health Awareness (3.0); 3 cr. This course provides a comprehensive prevention-oriented approach to personal health topics: stress management, mental health, physical fitness, nutrition and weight control, human sexuality, communicable and chronic diseases, addictive substances, and personal safety.

HEA 204 Contemporary Health Issues (3.0); 3 cr. This course provides students with the latest information on major current health issues and to teach them skills for them to be able to critically evaluate it. It covers selected quality and timely articles on a variety of health topics written by authors with diverse educational backgrounds and expertise. *Prerequisite:* Sophomore-Standing.

NHS 203 Principles of Epidemiology (3.0); 3 cr. An integrated course that introduces the basics in Epidemiology and Biostatistics. Topics include population measures of mortality and morbidity, epidemiological study designs, and concepts such as sources of bias, confounding and effect measure modification, and ethics in clinical trials and research. Methods of presenting health-related data, probability models, and assessment of causal associations and differences are also covered. Special attention is given to the Lebanese context.

NHS 204 Anatomy for Nursing and Allied Health Professions (3.0); 3 cr. This course covers the gross normal structure of human body organ system. Accompanies "Physiology for Nursing and Allied Health Professions".

NHS 205 Physiology for Nursing and Allied Health Professions (3.0); 3 cr. This course provides students with an understanding of the basic principles of the human body's functioning under normal healthy conditions necessary for nursing and allied health professions students. It outlines principles of physiology along with a survey of various body system (homeostasis; metabolism; nervous, muscular, cardiovascular, respiratory, gastrointestinal, renal, reproductive, and endocrine systems), and serves as a foundation for the clinical topics covered in the health sciences program.

FOOD SAFETY AND QUALITY MANAGEMENT

THE DEGREE OF MASTER OF SCIENCE IN FOOD SAFETY AND QUALITY MANAGEMENT

Degree Requirements (36 Credits)

Mission

The new Master of Science in Food Safety and Quality Management aims to provide graduates with advanced knowledge, skills, and the hands-on practice necessary for managing food safety and quality from farm to fork. This program is designed for graduates and professionals working or aspiring to work in the food industry as well as government sectors. It equips graduates with the skills needed to become managers and leaders with high ethical standards and lifelong learning skills.

Program Educational Objectives (POb)

The program will prepare students to:

- Provide information, training, and expertise in the design and management of food safety and quality management systems against the backdrop of an increasingly globalized food chain;
- Provide graduates with knowledge on national and international food safety and quality standards, laws, and regulations;
- Acquire the knowledge and skills required for planning, organizing, leading and assessing quality in the food chain;
- Equip graduates with strong research and technical competencies allowing them to respond to food safety challenges in a practical set-up and/or to pursue further doctoral studies;
- Prepare the students to work as managers/leaders in different food-related work environments; and
- Integrate ethical principles, leadership skills, as well as lifelong learning in the graduate's future professional practice.

Program Learning Outcomes ("W": weak correlation; "H": high correlation)

Upon graduation, students should be able to:

- Master appropriate methodologies and analytical techniques in the assessment of food safety and quality, using both current and rapid technologies **(POb d W, POb b W, POb a H);**
- Critically evaluate both Lebanese and international legislative frameworks in which the food industry operates **(POb b H, POb d W);**
- Assess, analyze, and manage risks associated with food hazards in a changing and developing environment **(POb a H, POb b H, POb e W);**
- Develop and implement quality assurance procedures in the food chain traceable to national and international standards and requirements **(POb c H, POb b H, POb a W);**
- Evaluate various local food industries and food service establishments through field trips and on-site observations **(POb c H, POb e W);**
- Exhibit effective communication skills and enhanced critical problem-solving through role-play and peer feedback **(POb e H);**
- Employ the process approach in a business setting which incorporates the Plan-do-check-act (PDCA) cycle and risk-based thinking **(POb a H, POb d W, POb e W);**
- Estimate the importance of establishing key performance indicators (KPIs) in quality management as a measurement of continuous improvement **(POb b H, POb e H, POb c H);**
- Critically integrate and apply scientific literature and pertinent research methodology in the assessment and improvement of food safety and quality management in different food industries and other related settings **(POb d H, POb c H, POb e W);** and
- Translate different professional competencies such as leadership, professional ethics, teamwork, written and oral communication, as well as lifelong learning into the implementation of the food quality management system **(POb e H, POb f H, POb b W).**

Admission Requirements

- **BS in Food Safety and Quality Management or a related field of study:** If the applicant has a BS in any health science or basic science background other than food safety and quality management, he or she will have to complete 12 credits of undergraduate courses and earn a minimum cumulative GPA of 3.0/4.0 in these courses.
- **Cumulative GPA:** A GPA of 3.0/4.0 is required, but a GPA between 2.7-2.99 will be conditionally accepted pending the completion of 9-12 credits of courses in the areas of identified deficiencies, and earning a minimum cumulative GPA of 3.0/4.0 in these courses.
- **English Communication Skills:** Applicants from institutions where English is not the language of instruction will be required to sit for either the NDU English Entrance Test or TOEFL.
- **Interview:** Applicants whose undergraduate degree is not from NDU may be asked for an interview by the Faculty.

Candidates may pursue either a thesis (MS with research) or a non-thesis (Applied MS with considerable course work) program of study.

Graduation Requirements

To satisfy the requirements for the degree of MS in Food Safety and Quality Management, students must complete a total of 36 credits with an overall average of at least 3.0/4.0. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 Cs grades allowed per program The distribution of credits per option is as follows:

1- Non-thesis option (Applied MS or Course-Work option):

a - Required courses:	30 credits
b - Elective courses:	6 credits

2- Thesis option:

a - Required courses:	24 credits
b - Elective courses:	3 credits
c - Thesis:	9 credits

The thesis option provides the necessary background and research experience; this option is more appropriate for students planning to pursue a Ph.D. The course-work option is designed to provide a broader background in Food Science and is more appropriate for students planning to join the job market. Additional courses may be taken in nutrition, management, and biostatistics.

Degree Requirements (Non-Thesis Option) (36 Credits)

1- Complete the following 12 required courses **30 cr.**
NTR 642, FQM 643, FQM 644, FQM 650, FQM 656, FQM 660, FQM 664, NTR 670, FQM 681, FQM 682, FQM 690, HEA 610.

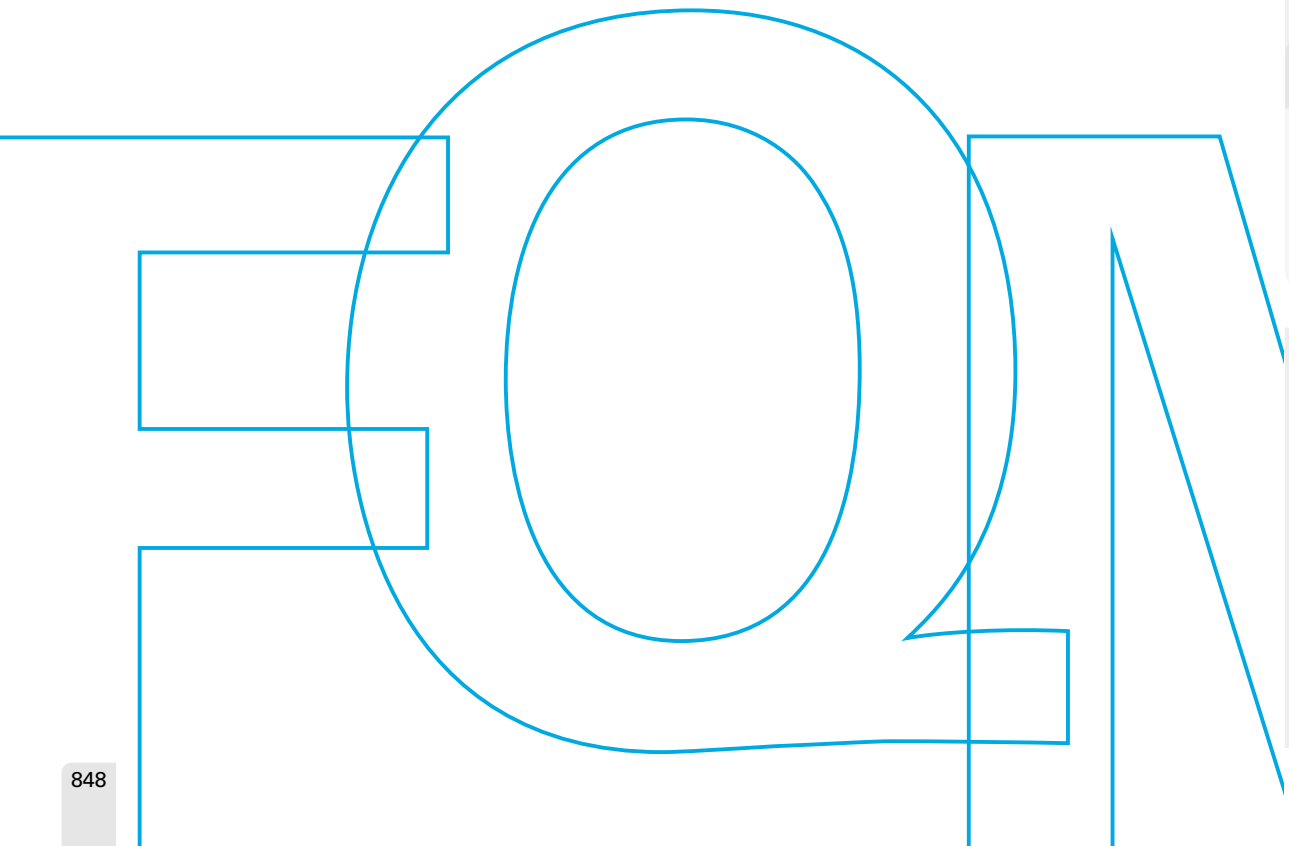
2- Complete 2 courses from the following list of major elective courses **6 cr.**
BIO 630, CHM 615, HEA 601, MBS 611, MGT 621, NTR 620, NTR 641, PRM 625, PRM 635.

Degree Requirements (Thesis Option) (36 Credits)

1- Complete the following 10 required courses **24 cr.**
NTR 642, FQM 643, FQM 644, FQM 650, FQM 656, FQM 660, NTR 670, FQM 681, FQM 682, HEA 610.

2- Complete 1 course from the following list of major elective courses **3 cr.**
BIO 630, CHM 615, HEA 601, MBS 611, MGT 621, NTR 620, NTR 641, PRM 625, PRM 635.

3- Complete the MS thesis requirements **9 cr.**
FQM 691, FQM 692, FQM 693.



Graduate Courses: Food Safety & Quality Management

FQM 643 Risk Assessment of Foods (3.0); 3 cr. This course details hazard identification, hazard characterization, exposure assessment, and risk characterization in the food industry. Case studies from Lebanon will be presented and emphasis will be placed on executing a risk assessment study in a selected local food industry.

FQM 644 Advanced Food Product Development (3.0); 3 cr. This course integrates knowledge gained in prior courses and provides an opportunity for students to utilize their knowledge in the conceptualization and development of new food products.

FQM 650 Research Methods in Food Safety and Quality Management (3.0); 3 cr. This course details the research techniques adopted in food safety and quality management research with human population groups. Research designs used in animal experimental stations will be covered. Emphasis is placed on criticism of research designs, sampling techniques, measurement and analysis issues, and validity of results.

FQM 656 Advanced Food Quality Management (3.0); 3 cr. This course details the total quality management principles and their application in ensuring product quality and safety. Development and auditing of food safety programs such as HACCP and ISO 22000 will be covered. International and national food regulatory systems along with the development and the scientific basis for food regulations will also be examined.

FQM 660 Special Topics (1.0); 1 cr. The course covers directed readings by the instructor of current food safety and quality management published in the most recent peer-reviewed journals.

FQM 664 Applied MS Practicum (0.3) 3 cr. This course places students in a food industry practicum setting which they will complete by submitting a comprehensive written report of their experiences.

FQM 681 Seminar I (0.1); 1 cr. This course will have a recent topic in food safety and quality management presented by MS students with critical analysis of the methods and data reported in refereed original articles following the approval of the instructor.

FQM 682 Seminar II (0.1); 1 cr. This course will have a recent topic in food safety and quality management presented by MS students with critical analysis of the methods and data reported in refereed original articles following the approval of the instructor.

FQM 690 Research Project (0.3); 3 cr. This course has students prepare a review paper of the literature on a recent topic in food safety and quality management following the approval and continuous supervision of the instructor.

FQM 691 MS Thesis I (0.3); 3 cr. Independent research guided by a supervisor toward completing the requirements of the MS thesis; Research Proposal.

FQM 692 MS Thesis II (0.3); 3 cr. Independent research guided by a supervisor toward completing the requirements of the MS thesis; Thesis Research. *Prerequisite:* FQM 691.

FQM 693 MS Thesis III (0.3); 3 cr. Independent research guided by a supervisor toward completing the requirements of the MS thesis; Thesis Write-Up. *Prerequisite:* FQM 692.

HUMAN NUTRITION

MASTER DEGREE

THE DEGREE OF MASTER OF SCIENCE IN HUMAN NUTRITION

Degree Requirements (35 Credits)

Mission

The mission of the MS in Human Nutrition is to advance nutrition research and dietetics practice in Lebanon through intellectually stimulating training, tailored mentorship, and advanced course work. The program provides a strong scientific foundation in nutrition, tied with hands-on experience in relevant areas of nutrition research and practice. The program aims at advancing critical thinking and problem-solving skills in graduates, which enable them to respond to rising nutrition and health concerns. It strives to promote in students a strong commitment to ethical standards, lifelong learning, multidisciplinary collaboration, effective evidence- and theory-based nutrition care and education to individuals and communities.

Program Educational Objectives (POb)

The program will prepare students to:

- Equip graduates with strong research competencies, gained through the personalized and enlightened mentorship required to pursue doctoral studies;
- Develop lifelong learners who are able to deliver optimal individualized nutritional plans and community intervention programs through maintaining up-to date knowledge and applying research findings in practice;
- Prepare graduates to progress to an advanced level of practice in clinical, community, and foodservice settings through diversified coursework and extensive research training;
- Develop students' critical thinking, leadership, teamwork, and communication skills to optimize their professional development while upholding high ethical standards; and
- Prepare graduates to be pioneers in responding to emerging nutrition, health, and food issues affecting the national and global communities.

Program Learning Outcomes ("W": weak correlation; "H": high correlation)

Upon graduation, students should be able to:

- Critically integrate scientific literature critically and theoretical knowledge in assessment and improvement of the nutritional status of individuals and communities along the food supply chain **(POb b H, POb e H);**
- Conduct appropriate methodology and analytical techniques, in the context of community nutrition, clinical nutrition, and food science settings **(POb a H, POb c H);**
- Demonstrate the culturally oriented-communication and counseling competencies, needed in nutrition practice **(POb d H, POb e H);**
- Acquire professional competencies such as leadership, teamwork, written, oral and communication, as well as lifelong learning, while upholding high ethical standards **(POb b H, POb c H, POb d H, POb e W);**
- Develop pertinent research methodology to be applied in the context of community nutrition, clinical nutrition and food science settings **(POb a H, POb c H).**

Admission Requirements

- **BS in Nutrition or a related field of study:** If the applicant has a BS in any health science or basic science background other than Nutrition, he or she will have to complete 12 credits of undergraduate nutrition courses and earn a minimum cumulative GPA of 3.0/4.0 in these courses.
- **Cumulative GPA:** A GPA of 3.0/4.0 is required, but a GPA between 2.7-2.99 will be conditionally accepted pending the completion of 9-12 credits of courses in the areas of identified deficiencies, earning a minimum cumulative GPA of 3.0/4.0 in these courses.
- **English Communication Skills:** Applicants from institutions where English is not the language of instruction will be required to sit for either the NDU English Entrance Test or TOEFL.
- **Interview:** Applicants whose undergraduate degree is not from NDU may be asked for an interview by the Faculty.

Candidates may pursue either a thesis (MS with research) or a non-thesis (Applied MS with considerable course work) program of study. Candidates can do research in the areas of nutrition and psychology, biochemistry, clinical nutrition, sports nutrition, or public health nutrition.

Graduation Requirements

To satisfy the requirements for the degree of MS in Human Nutrition, students must complete a total of 35 credits with an overall average of at least 3.0/4.0. The minimum passing grade of a graduate course is "C." Students in graduate studies are required to maintain a cumulative GPA of at least 3.0 in all courses taken for graduate programs with no more than 2 Cs per program. The distribution of credits per option is as follows:

1- Non-thesis option (Applied MS or Course-work option):

a - Required courses:	26 credits
b - Elective courses:	9 credits

2- Thesis option:

a - Required courses:	20 credits
b - Elective courses:	6 credits
c - Thesis:	9 credits

The non-thesis option is designed to provide a broader background in Nutrition and is more appropriate for students planning to join the job market. The Thesis option provides the necessary background and research experience; this option is more appropriate for students planning to pursue a Ph.D. Additional course may be taken in biology, education, and biostatistics.

Degree Requirements (Non-Thesis Option) (35 credits)

1- Complete the following 10 required courses (26 credits):
NTR 650, NTR 651, NTR 652, NTR 653, NTR 655, NTR 665, NTR 681, NTR 682, NTR 690, HEA 610.

2- Complete three elective courses from the following list of courses (9 credits):
NTR 620, NTR 630, NTR 633, NTR 635, NTR 641, NTR 642, NTR 660, NTR 670, HEA 601.

3- Pass one written comprehensive examination:
The examination shall be conducted after having completed required courses (other than NTR 665 and NTR 690), with an overall average of 3.0/4.0.

Degree Requirements (Thesis Option) (35 credits)

1- Complete the following eight required courses (20 credits):
NTR 650, NTR 651, NTR 652, NTR 653, NTR 670, NTR 681, NTR 682, HEA 610.

2- Complete two elective courses from the following list of elective courses (6 credits):
NTR 620, NTR 630, NTR 633, NTR 635, NTR 641, NTR 642, NTR 655, NTR 660, HEA 601.

3- Complete the MS thesis requirements (9 credits):
NTR 691, NTR 692, NTR 693.

Graduate Courses: Human Nutrition

NTR 620 Nutrition Psychology (3.0); 3 cr. This course explores the relationship between nutrition and psychology, and the characteristics of human behavior that affects people's dietary patterns. It covers the biological, emotional, cognitive, and environmental functions in dietary adherence. Proficient methods of counseling patients and encouraging changes will be emphasized.

NTR 630 Integrated Metabolic Regulation (3.0); 3 cr. This course provides recent knowledge in metabolic regulation in cells and tissues. Emphasis will be placed on relevant endocrine organs and hormones, mechanisms involved in metabolic regulation, the integration of macronutrients metabolism, the nervous system's involvement in metabolism, diabetes mellitus, lipoproteins metabolism, and energy balance and body weight regulation.

NTR 633 Community and Public Health Nutrition (3.0); 3 cr. This course covers the broad range of community nutrition research, programs and policies in the world and Lebanon. It addresses the nutrition and health issues facing today's communities in all the different categories of settings. Students will become familiar with nutrition-related and community-based research and programs.

NTR 635 Nutrition in Sports (3.0); 3 cr. This course examines the physiology of exercise, macronutrient and micronutrient requirements, and fluid needs of athletes engaged in all form of sports. It also covers gender-specific requirements, appropriate dietary habits pre/post-exercise, and the recent knowledge on the role of potential ergogenic aids.

NTR 641 Herbs, Foods and Phytochemicals (3.0); 3 cr. This course covers the health risks and benefits of herbal medicines and food phytochemical use. The active ingredients of the different herbs and their mode of action along with the clinical applications will be presented.

NTR 642 Food and Nutritional Toxicology (3.0); 3 cr. This course examines potential chemicals in food known to produce adverse effects on human health. It covers the impact of food containing environmental contaminants or natural toxicants, food additives, chemicals in food packaging, and nutrient excesses and malnutrition on nutrient metabolism.

NTR 650 Research Methods in Human Nutrition (3.0); 3 cr. This course details the research techniques adopted in nutrition research with human population groups. Research designs used in animal experimental stations will be covered. Emphasis will be placed on criticism of research designs, sampling techniques, measurement and analysis issues, and validity of results. *Prerequisite:* HEA 610.

NTR 651 Advanced Macronutrients Nutrition and Metabolism (3.0); 3 cr. This course is a forum for advanced discussions of carbohydrates and dietary fibers, lipids, protein, and alcohol nutrition and metabolism.

NTR 652 Advanced Micronutrients Nutrition and Metabolism (3.0); 3 cr. This course is a forum for advanced discussions of the nutritional, biochemical, and physiological aspects of vitamins and minerals in humans.

NTR 653 Advanced Nutrition throughout the Lifecycle (3.0); 3 cr. This course is a forum for in-depth discussions of the recent scientific developments in nutrient requirements and related disorders during the different stages of human life along with the controversial issues present in the literature. *Prerequisite:* HEA 651.

NTR 655 Advanced Medical Nutrition Therapy (3.0); 3 cr. This course provides an in-depth study of the nutrition-related diseases which affect physiological function and the pathological disorders which result in nutritional disease. The emphasis will be on the following areas: endocrinology, metabolism, gastroenterology and hepatobiliary, cardiovascular, and nephrology. *Prerequisites:* NTR 651, NTR 652, and consent of advisor.

NTR 660 Special Topics (3.0); 3 cr. This course covers directed readings by the instructor of current nutritional knowledge provided by the most recent peer-reviewed journals.

NTR 665 Applied MS Practicum (0.3); 3 cr. This course places students in a clinical, community, or foodservice practicum setting following which a comprehensive written report shall be submitted.

NTR 670 Techniques in Nutrition Research (1.4); 3 cr. This course consists of a series of laboratory modules emphasizing quantitative and qualitative methods and experimental analysis used in nutrition research and sensory evaluation of food. The modules entail lab preparations or method applications in field settings, data collection and analysis, and interpretation in a comprehensive written report. Instrumentation and relevant software utilization will be emphasized.

NTR 681 Human Nutrition Seminar I (0.1); 1 cr. This course will have a recent topic in nutrition presented by MS students with critical analysis of the methods and data reported in refereed original articles following the approval of the instructor.

NTR 682 Human Nutrition Seminar II (0.1); 1 cr. This course will have a recent topic in nutrition will be presented by MS students with critical analysis of the methods and data reported in refereed original articles following the approval of the instructor.

NTR 690 Research Project (0.3); 3 cr. This course will have students prepare a review paper of the literature on a recent topic in nutrition following the approval and continuous supervision of the instructor.

NTR 691 Human Nutrition MS Thesis I (0.3); 3 cr. Independent research guided by a supervisor toward completing the requirements of the MS thesis; Research Proposal.

NTR 692 Human Nutrition MS Thesis II (0.3); 3 cr. Independent research guided by a supervisor toward completing the requirements of the MS thesis; Thesis Research. *Prerequisite:* NTR 691.

NTR 693 Human Nutrition MS Thesis III (0.3); 3 cr. Independent research guided by a supervisor toward completing the requirements of the MS thesis; Thesis Write-Up. *Prerequisite:* NTR 692.

NTR

Graduate Faculty Courses

HEA 601 Introduction to Public Health (3.0); 3 cr. This course provides an introduction to public health. Topics include: scope and core disciplines of public health, core functions and essential services of public health, determinants of health, approaches to health intervention, values and ethics of public health, and current issues in public health.

HEA 610 Essentials of Epidemiology and Biostatistics (3.0); 3 cr. This course provides basic principles of epidemiology and biostatistics. It covers the definition of epidemiology, types and sources of epidemiological data, epidemiological study designs, data analysis, and methods of statistical inference.

HEA

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