

**Notre Dame University
Faculty of Engineering
Mechanical Engineering Department**

Annual Report

Academic Year 2008-2009

Michel Hayek

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1. Introduction

The Mechanical Engineering Department at Notre Dame University, Lebanon, is striving to graduate mechanical engineers able to cope with all challenging issues that normal engineers may face in nowadays societies. The challenges are not only technical, for which our graduates are well prepared, but also societal and, in this respect, ME graduates have the luggage necessary to help them move forward. To achieve that goal, the ME program at NDU involves a balance between not only theoretical and practical issues, but also between technical and non-technical or cultural aspects.

ME students at NDU are served by a group of devoted faculty members, both full-timers and part-timers, spending their time to guide them in all their expectations. Moreover, the university offers them state-of-the-art laboratories, which are under continuous upgrade. The program is also continuously updated to include the latest ideas related to engineering education in order to offer an up-to-date degree in mechanical engineering.

2. Personnel

2.1 Full-Time Faculty

- **Walid Assaf**, Professor, Ph.D., Nuclear Engineering, 1965, Iowa State University (USA). *Areas of interest:* Thermodynamics, Energy, Prime Movers.
- **Michel El Hayek**, Associate Professor & Chairperson, Docteur Européen, Sciences Appliquées, 1997, Faculté Polytechniques de Mons (Belgium). *Areas of interest:* Fluid Mechanics, Heat Transfer, Numerical Techniques.
- **Ghazi Asmar**, Associate Professor, Ph.D., Mechanical and Aerospace Engineering, 1997, University of Missouri, Columbia (USA). *Areas of interest:* Mechanics of Materials, Vibrations, Numerical Techniques.
- **Francis Francis**, Assistant Professor, Ph.D., Mechanical and Manufacturing Engineering, 2003, University of New South Wales (Australia). *Areas of interest:* Materials Science, Engineering Mechanics, Manufacturing.
- **Nagib Metni**, Docteur, Automatique et Traitement du Signal et des Images, 2006, Université de Nice, Sophia-Antipolis (France). *Areas of interest:* Control, Mechatronics, Robotics.

2.2 Part-Time Faculty

- **Tony Jabbour**, Ph.D., Mechanical Engineering, 1998, Ecole Polytechnique de Montréal (Canada). *Areas of interest:* Mechanical Design, Machinery, CAD/CAM.
- **Ali Hammoud**, Ph.D., Mechanical Engineering, 1990, University of Wales, Swansea (UK). *Areas of interest:* Applied Fluid Mechanics, HVAC.

- **Gaby Nehme**, Ph.D., Materials Science and Engineering, 2004, University of Texas at Arlington (USA). *Areas of interest:* Materials Science, Tribology.
- **Rany Rizk**, Doctorat, Mechanical Engineering, 2007, Université Clermont-Ferrand II (France). *Areas of interest:* Machinery, Robotics.
- **Chady Azoury**, Doctorat, 2004, Université Paul Sabatier - Toulouse (France). *Areas of interest:* Drafting.
- **Souhail Matar**, Ph.D., Mechanical Engineering, 1997, Byelorussian Polytechnic Academy (Belarus). *Areas of interest:* Internal Combustion Engines.

2.3 Full-Time Co-Academics

- **Wissam Daou**, B.E., Mechanical Engineering, 2000, Notre Dame University (Lebanon), Laboratory Instructor.

2.4 Full-Time Non Academics

- **Maroun Eid**, Laboratory Technician.
- **Ghada Khoury**, Secretary.

3. Promotions & Faculty Development

- Dr. Charbel Bou Mosleh will join the ME Department as assistant professor starting October 1, 2009.

Dr. C. Bou Mosleh received his B.E. in Mechanical Engineering from Notre Dame University (Lebanon) in 2001, his M.S. and Ph.D. in Aerospace Engineering Sciences from the University of Colorado at Boulder (USA) in 2002 and 2005, respectively. He moved then to Stanford University as PostDoc and has been recently promoted to the Research Associate level under the supervision of Prof. Ch. Farhat, a worldwide leader in finite elements research. Dr. Bou Mosleh is active in the field of computational techniques as applied to fluid-structure interactions and is regularly publishing in refereed journals and conference proceedings.

4. Statistics

Various statistics are given in this section to show the overall characteristics and performance of the mechanical engineering program at NDU.

4.1 Student Enrollment

	Fall 2008	Spring 2009
Year 1	132	97
Year 2	76	77

Year 3	60	68
Year 4	49	51
Year 5	17	16
Total	334	309

4.2 Graduates (see Appendix A for complete lists)

	Summer 2008	Fall 2008	Spring 2009
Total	7	17	25

4.3 New Students (accepted and enrolled)

	Fall 2008	Spring 2009
Total	74	2

4.4 Courses Offered & Results

		Fall 2008	Spring 2009
3-Credit Courses	Number of Sections	26	30
	Average Class Size	26.44	25.07
	Average GPA	2.34	2.56
1-Credit Courses	Number of Sections	7	8
	Average Class Size	13.29	13.75
	Average GPA	2.87	3.24
Project Courses	Number of Sections	5	7
	Average Class Size	3.4	3.86
	Average GPA	4.0	3.94

4.5 Teaching Load (in mechanical engineering only – credits taught in other departments / campuses are not included)

	Summer 2008	Fall 2008	Spring 2009
W. Assaf	6	13.5	11.5
M. El Hayek	6.47	9	7.5
G. Asmar	6	13	14.5
F. Francis	6	17	15.37
N. Metni	0	15.5	16
W. Daou	1	4	4
Total Full-Time	25.47	72	68.87

A. Hammoud	2	6	9
T. Jabbour	0	0	3.87
G. Nehme	0	6	12
R. Rizk	0	6	9
Ch. Azoury	0	2	5
S. Matar	0	0	3
G. Bachour	1	1	0
Total Part-Time	3	21	41.87
Total	28.47	93	110.74

4.6 Advising Load (enrolled students only)

	Fall 2008	Spring 2009
W. Assaf	75	64
M. El Hayek	100	99
G. Asmar	63	57
F. Francis	81	75
N Metni	15	14
Total	334	309

5. Curriculum Development

One proposal to upgrade the ME program was developed and approved by the Department Curriculum Committee and all higher level committees (Faculty Curriculum Committee, University Curriculum Committee, ...). It consists of adding the following new course to the pool of technical electives courses:

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.

The main objective of adding such a special course is to accommodate new and rapidly changing fields of mechanical engineering into the program without the need for a permanent listing of the courses related to those fields. Such a course is used everywhere in terminal year in order to expose students to the latest aspects of the technology, and similar courses are used in the other engineering departments at NDU (Civil Engineering and Electrical & Computer and Communication Engineering).

The new sequence of senior project courses involving two courses, MEN598, Engineering Design I, and MEN599, Engineering Design II, has been put under testing in Spring 2009 and summer 2009 and the outcomes are expected to be positive. The old MEN460 course is being offered in summer 2009 for the last time.

A new master in mechanical engineering program has been developed and approved by the ME Curriculum Committee. The program involves a balance between required and elective courses plus a 9-credit thesis course. The proposal is being investigated at the faculty curriculum committee level.

6. Laboratory Equipments & Software

State of the art laboratory equipments are being used in the department in order to train students on various practical issues related to mechanical engineering. The list is being expanded on regular basis and the academic year 2008-2009 saw the acquisition of a full set of testing equipments thanks to the generous donation from Al-Walid Bin Talal Foundation. The set includes but is not limited to:

- Pressure measurement tools including digital manometers
- Temperature measurement tools including digital thermometers
- Flow measurement tools including ultrasonic flow manometer
- Velocity measurement tools including hot-wire and vane anemometers
- Gas analyzers with CO and NO_x analysis capability
- Machinery measurement tools including vibration, power, and rpm meters
- Solar radiation and HVAC kits
- Viscometer
- Etc...

Furthermore, the department acquired a professional smoke generator to be used with the wind tunnel for flow visualization purposes.

More equipments are being added on regular basis. Expected equipments in the near future include manufacturing and mechatronics/control laboratories.

Parallel to the state-of-the-art laboratory equipments, the department is planning to enhance its expertise in terms of computational activities related to the various fields of mechanical engineering. To that end, engineering and scientific software are needed and the department has started a process of acquiring state-of-the-art computational tools. The first on the list is a finite-element package, namely NSTRAN and its associated tools like MARC, DYTRAN, PATRAN, etc... A university license (150 users) has been acquired. Next on the list, are software like Fluent for CFD applications, SolidWorks for CAD (CAM) issues, and Automation Studio for Control problems.

7. Research

All ME faculty members are involved in research and publications to various extents. The different fields of research are related to the areas of interest as listed under Personnel section. The following items deserve special mention:

- The cooperation program between NDU represented by Dr. M. Hayek and the University of Technology, Baghdad (Iraq), represented by Dr. M. Zablouk on a sabbatical leave at NDU is at its final stage. One journal paper is to be submitted very soon.
- A collaboration link has been established with the University of Tennessee Space Institute and four ME graduates are already conducting research over there or have been already accepted to pursue higher degrees (MS and PhD). The two sides are working on a memorandum of understanding that may benefit both institutions.

8. Senior Projects

The following senior projects were successfully presented during the academic year 2008-2009 and copies of the corresponding reports were forwarded to the central library for archiving.

8.1 Summer 2008

Senior Project	Prepared by	Advised by
Fire Fighting For Burj Al Sakr Tower	Wadih Ishac	Dr. M. Hayek
Lumbumbashi Fire Fighting	Charbel Hakme, Najib Khoury	Dr. A. Hammoud
Mechanical Design for a Luxury Residential Villa in Beirut (Heating and Cooling)	Bashar El Doueick	Dr. A. Hammoud

8.2 Fall 2008

Senior Project	Prepared by	Advised by
Mechanical design for Ramle El Bayda Building: Air-Conditioning, Ventilation, and Water Supply	Samer El Khoury, Peter Khater	Dr. W. Assaf
Heating, Ventilating, and Air-Conditioning (HVAC), Smoke Management, and Fire-Fighting for a 5-Star Hotel in Jeddah	Henry Zein	Dr. W. Assaf
The Windbelt: Turbine-Less Wind Power Device	Eva Saade	Dr. M. Hayek
CFD Simulation of a Wind Turbine	Stefani Kova	Dr. M. Hayek
Benefits of Formation Flight (Numerical Simulation)	Georges Akiki	Dr. M. Hayek
Water Distribution System Simulation and Development	Anis Berberi, Joseph Samaha	Dr. M. Hayek
Heating, Cooling, and Water Distribution Systems for a Luxury Residential Villa in Tunisia	Walid Nassereddine	Dr. M. Hayek
Energy Audit and Simulation Using EnergyPlus Section of NDU Campus	Sylvie Melki	Dr. M. Hayek
Design of Pendulum Clock	Georges Ishak	Dr. G. Asmar

Bending of an Infinite Isotropic Plate Containing Three Aligned Circular Holes	Geroges Mokbel	Dr. G. Asmar
Solar Fan	Shadi Semaan, Antoine Kehdi	Dr. F. Francis
Concurrent vs. Traditional Engineering	Paul Bakhos, Ziad Menhem	Dr. F. Francis
The Mobile Bitumen Heater	Serop Kizirian, Rami Michael	Dr. N. Metni
HVAC for Duroy Hotel	Lebon Ferri	Dr. A. Hammoud

8.3 Spring 2009

Senior Project	Prepared by	Advised by
Soloven	Rizk Akiki, Elie Assaf, Rami Danil	Dr. W. Assaf
Solar Water Distillation	Elias Akoury, Pierre Eid	Dr. W. Assaf
HVAC & Plumbing Design	Elie Kaddoum, Joe Lattouf	Dr. W. Assaf
Villa Adma: HVAC & Plumbing Designs	Mark Khoury, Ibrahim Abou Mrad	Dr. M. Hayek
Air-Conditioning and Water Distribution for Dama Building	Amine Geagea, Joseph Karam	Dr. M. Hayek
HVAC & Fire Fighting for the Ocean Wind Hotel	Rachad Chebly, Paul Bouez	Dr. M. Hayek
Mars Rocks	Ralph Abi-Tayeh, Mouhanad Moustafa, Patrick Waked	Dr. G. Asmar
The Air Vehicle: A Prototype Bike That Runs on Compressed Air	Nadim Saifeddine, Elie Haikal, Joseph Najem	Dr. G. Asmar
Stress Concentration Factors for Pressurized Elliptic Cross Bores in Blocks	Charbel Younes, Anthony Chalhoub	Dr. G. Asmar
The Burger Machine: PLC Based Food Processing Machine	Rami Bou Hadir, Elie Karam	Dr. F. Francis
Halloween Cookies Machine	Michel Chakar, Elie El-Khoury, Ralph Daou	Dr. F. Francis
Stationary 2R Tracking Camera	Fady Atallah, Jean-Louis Mailhac, Roy Njeim	Dr. N. Metni
Moment of Inertia Machine	George Fadel, George Kmeid, Simon Kassis	Dr. N. Metni

9. Publications

The following papers were published by ME Faculty during the academic year 2008-2009. All publications are in refereed journals and international conferences.

1. M. Hayek, Investigation of Evacuated-Tube Solar Collectors Performance Using Computational Fluid Dynamic, Proceedings of ACTEA09, Notre Dame University, Lebanon, pp. 240-244, 2009.
2. S. Melki, M. Hayek, Building Simulation Tools and Their Role in Improving Existing Building Designs, Proceedings of ACTEA09, Notre Dame University, Lebanon, pp. 503-507, 2009.
3. F. Francis, Electrochemical Machining of Non-ferrous Alloy Al Mg Cu O5, International Conference on Non – Ferrous Metals (NF-MET 2008), Moscow, Russia, November 11-14, 2008.
4. F. Francis, Electrochemical Machining of Ferrous and Non-ferrous Alloys, FAME 2008, International Conference on Fascinating Advancement in Mechanical Engineering, India, December 11-13, 2008.
5. F. Francis, Thermoelectric Plates Cutting Tool Cooling – A Case of Cast Iron, International Conference on Minerals to Materials (M2M 2008), Cairo, Egypt, December 15-18, 2008.
6. F. Francis, Environmentally Conscious Quality Function Deployment - A New approach for Green Manufacturing, Proceedings of ACTEA09, Notre Dame University, Lebanon, pp. 340-343, 2009.
7. F. Francis, Total Quality Management-A Tool for Design for Environment, Proceedings of ACTEA09, Notre Dame University, Lebanon, pp. 351-354, 2009.
8. N. Metni, Neuro-Control of an Inverted Pendulum using Genetic Algorithm, Proceedings of ACTEA09, Notre Dame University, Lebanon, pp. 27-33, 2009.
9. E. Chakar, G. Asmar, Analysis of an Isotropic Plate Containing Three Identical Circular Holes Arranged in a Triangular Configuration, Proceedings of ACTEA09, Notre Dame University, Lebanon, pp. 62-67, 2009.

10. Reviewing

All full-time faculty members are involved at various levels in the organization of the International Conference on Advances in Computational Tools for Engineering Applications (ACTEA09) to be held at NDU, July 14-17, 2009. They all contributed to the reviewing process of the conference.

Dr. M. El Hayek is member of the International Scientific Committee of the 7th IASME/WSEAS Int. Conf. on Fluid Mechanics and Aerodynamics (FMA'09) and the 7th IASME/WSEAS Int. Conf. on Heat Transfer, Thermal Engineering, and Environment (HTE'09), Moscow, Russia, August 20-22, 2009. He reviewed one research proposal for the LNCSR.

Dr. N. Metni is contributing to the review process of the IEEE Transactions on Mechatronics, the Control Engineering Practice Journal, the 2009 IEEE International Conference on Robotics and Automation (ICRA'09), and the International Conference on Electric Power and Energy Conversion Systems (ICECS'09).

11. Students' Excellence

Many ME students are excelling at various levels both academic and social. The following students deserve special mention:

- Georges Akiki received the 2008-2009 Dean's Award for Academic Excellence owing to his highest GPA among the 2008-2009 graduates. Moreover, Georges is the Valedictorian of the Faculty of Engineering for the same academic year and has applied to the University of Tennessee Space Institute and got accepted with full scholarships.
- Eva Saade was the recipients of the 2008-2009 Dean's Award for Engineering Innovation for her final year project consisting of the design and testing of a windbelt system to convert the energy associated with the vortex shedding mechanism into useful power.
- The organizing committee of the first ASME Student Professional Development Conference organized at NDU from May 15 to May 16, 2009. The committee is made of the following ME students: Charles Haddad, Elie Aoun, Jessica Ghobril, Patrick Jreijiri, Joe Lattouf, Jean Chemaly, and Camil Fares, plus a team from AUB and LAU.
- Charles Haddad has been elected chair of the newly established Student District Operating Board of the ASME District J (Middle East & Africa). As such, he was invited twice to participate in meetings and student conferences in the US.
- Alain Achkar with his "Snickers Rocks" vehicle won the first prize (1500 US\$ + Travel allowance to the US) in the Student Design Competition organized within the 1st ASME Student Professional Development Conference held at NDU, May 15-16, 2009. He won also the mechatronics competition (100 US\$) and is preparing for his trip to the US to participate in the grand challenge in which NDU is to compete with universities from all over the world.
- A team made of Charles Haddad, Georges Akiki, and Jessica Ghobril with their "Genius NDU" vehicle won the second prize (1000 US\$) in the Student Design Competition organized within the 1st ASME Student Professional Development Conference held at NDU, May 15-16, 2009.
- Ihab Musharrafieh won the third prize (100 US\$) in the Old Guard Oral Presentation competition organized within the 1st ASME Student Professional Development Conference held at NDU, May 15-16, 2009.
- Patrick Jreijiri won the first prize (100 US\$) in the Old Guard Poster competition organized within the 1st ASME Student Professional Development Conference held at NDU, May 15-16, 2009.

Many ME graduates were accepted at AUB and abroad (USA, Canada, Europe) to follow a master degrees and are performing very well according to the feedbacks the department is collecting from various sources.

12. Exchange Programs

A collaboration link has been established with the University of Tennessee Space Institute and four ME graduates are already pursuing higher degrees over there. The two sides (NDU and UTSI) are working on a memorandum of understanding that may benefit both institutions. A final draft has been submitted to the appropriate academic authorities for evaluation.

13. Committees & Services

All full-time faculty members were involved in a way or another in committee works at all levels, from the departmental level up to the university level.

13.1 Departmental Level

The department control bodies are made of the following three committees with their composition:

- Department Personnel Committee: Dr. M. El Hayek (Chairperson), Dr. W. Assaf, Dr. G. Asmar, Dr. F. Francis (Secretary).
- Department Curriculum Committee: Dr. M. El Hayek (Chairperson), Dr. W. Assaf, Dr. G. Asmar, Dr. F. Francis, and Dr. N. Metni (Secretary).

Various meetings were organized throughout the academic year for which minutes were issued and archived in the department files.

13.2 Faculty Level

The department contributes to the control bodies of the faculty as following:

- Council of Chairpersons: Dr. M. El Hayek.
- Faculty Personnel Committee: Dr. M. El Hayek
- Faculty Curriculum Committee: Dr. F. Francis.

13.3 University Level

Dr. M. El Hayek is acting as member and secretary of the “E-Data Security Policies Committee”.

13.4 Community Services

Besides committee works, the ME faculty members are well known for their commitment and continued services to ME students and to the entire NDU community in general. In fact, two student branches of learning societies are operating within the mechanical engineering department, namely, the ASME Students Branch, advised by Dr. G. Asmar, and the ASHRAE Students Branch, advised by Dr. M. El Hayek. Beyond that, Dr. M. El Hayek is also the advisor of a major student club operating at a university scale.

14. Activities: Lectures, Seminars, ...

Several activities were organized by the department during the academic year 2008-2009, especially by students clubs and local branches. Some of major events are listed here:

- Presentation on January 13, 2009, entitled “Injection and Swirl Driven Rocket Engines” by Prof. Joseph Majdalani, University of Tennessee Space Institute (USA), organized by the Department with the support of ASME and ASHRAE Branches at NDU.
- Presentation on May 28, 2009, entitled “FEM Computations using MSC Software” by Mr. Eddy Fadel, MSC Software (France), organized by the Department with the support of ASME and ASHRAE Branches at NDU.
- Presentation on May 12, 2009, entitled “Petrofac International” by Mrs. Rita Abi Saab, Petrofac Int. (UAE), organized by the Department with the support of ASME and ASHRAE Branches at NDU. The presentation was followed by hiring tests open to all engineering students.
- The 1st Student Professional Development Conference of the ASME District J (Middle East and Africa) was organized from May 15 to May 16, 2009, by the local ASME Student Branch at NDU with the help of the local ASHRAE Student Branch and other Lebanese ASME student branches (AUB and LAU).
- The department is actively participating in the organization of the International Conference on Advances in Computational Tools for Engineering Applications (ACTEA09) to be held at NDU from July 14 to July 17, 2009. Six papers from the department were accepted and will be presented at the conference.

15. Future Plans

The past academic year saw a boost in the department activities, especially at students’ level. Further progress is still needed and several plans are being considered in order to improve the overall performance of the department in meeting students’ and market needs.

- Expansion of the laboratories to includes new tools and systems that can be used to operate a set of new laboratory courses. On top of the list are equipments to operate a manufacturing laboratory (set of machines tools for student training), and a mechatronics

& control laboratory. Such an expansion will push the ME laboratories at NDU among the best in the country for ME education and training.

- Development of computational facilities by acquiring both the hardware and software required. Such facilities may be used to create a kind of computational research center whose main goal may be to serve both NDU users and the local industry in term of computational expertise.

To achieve those goals and to sustain possible expansion, additional faculty members may be needed in a near future. The capacity of the department to add new faculty members is rather large taking into account the non-negligible percentage of services being fulfilled by part-time faculty (see section 4, Statistics, for more details).

Appendix A: ME Graduates 2008-2009

Summer 2008

ID #	Name	GPA
2002-0387	Charbel Antoine HAKMEH	2.24
2002-0762	Wadih Assad ISHAC	2.36
2003-1433	Youssef Nasri NASR	2.36
2003-1608	Patrick Boutros SABA	2.60
2003-8113	Bashar Jihad EL DOUEICK	2.64
2004-1323	Jad Clement DAHER	3.14
2004-3882	Nagib Jean KHOURY	2.59

Fall 2008

ID #	Name	GPA
2004-1391	Georges Henry AKIKI	3.97
2004-1527	Anis George BERBERI	3.52
2000-1370	Alain Antoine CHAGOURY	2.10
2004-1385	Samer Najib EL KHOURY	2.81
2003-1310	Lebon Najib FERRI	2.53
2004-3821	Georges Michel ISHAK	3.05
2003-1071	Antoine Toufic KEHDI	2.33
2004-1408	Peter Antoine KHATER	3.00
2004-6538	Stephani Nicolas KOVA	3.75
89-1747	Sylvie Atif MELKI	3.09
2004-3814	Rami Fahed MIKHAEL	2.99
2004-6545	Georges Massoud MOKBEL	3.35
2003-1675	Walid Massoud NASSERDDINE	2.82
2004-6765	Edgard Gaby RAAD	2.96
2004-1445	Eva Selim SAADE	3.22
2004-1339	Joseph Nabil SAMAHA	3.00
2004-6709	Henry Mansour ZEIN	2.96

Spring 2009

ID #	Name	GPA
2002-0750	Ibrahim Rachid ABOU MRAD	2.24
2004-6612	Rizk Farid AKIKI	2.41
2004-1442	Elias Michel AKOURY	2.61
2003-8085	Mohanad Atieh AL MOSTAFA	3.40
2004-6749	Elie Clement ASSAF	3.30
2004-1459	Fady Ibrahim ATALLAH	3.66
2003-1477	Paul Michel BAKHOS	2.26
2004-1013	Rami Elias BOU HADIR	3.40
2003-1004	Paul Naji BOUEZ	2.19
2003-1193	Michel Samir CHAKAR	2.15
2003-1150	Rachad Maroun CHEBLY	2.26
2004-3845	Rami Amer DANIL	2.75
2004-6569	Georges Tony FADEL	3.15
2004-6704	Amine Antoine GEAGEA	2.57
2004-6929	Elie George HAIKAL	2.57
2003-3261	Elie Georges KADDOUM	2.14
2003-3219	Mark Anesty KHOURY	2.27
2004-1334	Serop Samuel KIZIRIAN	2.97
2004-1678	Georges Youssef KMEID	2.88
2004-1121	Jean-Louis Gerard MAILHAC	3.03
2003-1462	Ziad Antoine MENHEM	2.26
2004-6706	Roy Nazih NJEIM	2.61
2004-3777	Chadi Atef SEMAAN	3.07
2004-4320	Patrick Sami WAKED	2.56
2003-3181	Charbel Elias YOUNES	2.07