

Charbel Habchi, PhD, HDR

Curriculum Vitae

Citizenship: French & Lebanese Citizen

Languages: English, French, Arabic

Phone: +961.71.05.43.78

[My Google Scholar](#)

Email: habchi.charbel@gmail.com

[My ResearchGate Profile](#)

Magnetohydrodynamics
Multifunctional heat exchangers
Thermoregulation Vortex generators
Soft robots **Heat transfer**
Computational fluid dynamics Machine learning
Plasma Artificial intelligence **Mixing**
Pulsed laser propulsion **Fluid-structure interaction**
Static mixers

I am an Assistant Professor of Mechanical Engineering at Notre Dame University-Louaize which is ranked among top 5 Universities in Lebanon and it has NECHE and ABET accreditations. My education joins Energy and Thermal Sciences (Master of Science and Doctor of Philosophy) and Mechanical Engineering (Master of Science). I teach courses in the thermal and fluids engineering track and supervise MS and PhD students since 2011. My main research interests focus on computational fluid dynamics, fluid-structure interaction, heat and mass transfer, MHD flows and machine learning for data reduction. I have granted more than 250 thousand USD in funding from Lebanese and European institutions. I published more than 50 papers in peer reviewed journals (Int. J. Heat Mass Transfer, Phys. Fluids, Phys. Plasma, Chem. Eng. Sci...) and around 50 proceedings in international conferences (ASME, ASHRAE, IEEE...) and my h-index is 19. I have international collaborations with researchers from USA (UCLA and Cal State San Marcos), Canada, France and Lebanon.

Table of Contents

Table of Contents	1
Appointments	2
Education	4
Research Grants	4
Awards	5
Publications	5
Student Supervision	12
Teaching	13
Institutional Services	15
Communities	15
Consulting	15
Software and Technical Skills	16
Main Collaborators	16

Appointments

The table below summarizes my work experience at different educational institutions. It does not include consulting work I conduct to support industry.

Date	Position	Institution
09/2015 – present	Assistant Professor, Mechanical Engineering	Notre Dame University-Louaize, Lebanon
05/2019 – 08/2019	Visiting Professor, LARIS Polytech Angers	University of Angers, France
06/2018 – 08/2018		
07/2017 – 08/2017		
07/2015 – 07/2015	Visiting Researcher, Gharib Research Group	California Institute of Technology, CA, USA
10/2011 – 08/2015	Assistant Professor, Mechanical Engineering	Lebanese International University, Lebanon
10/2016 – 08/2015	Research Leader	
07/2016 – 09/2016	Visiting Professor, Industrial Energy	IMT ¹ Lille Douai, France
07/2014 – 09/2014		
07/2012 – 09/2012		
12/2010 – 09/2011	Postdoctoral Fellow, Industrial Energy	IMT Lille Douai, France
10/2007 – 11/2010	Graduate Teaching Experience	University of Nantes, France

Assistant Professor of Mechanical Engineering at Notre Dame University-Louaize – Lebanon

Address: Notre Dame University-Louaize, School of Engineering, Office E.070, Zouk Mosbeh, Lebanon

Phone: +961.9.218.950

Employment period: 09/2015 – present

Supervisor: Michel Hayek (SoE Dean)

Duties: Assistant Professor with duties to teach undergraduate and graduate courses in thermal and fluids engineering, conduct fundamental and applied research, and participate in department, faculty and university initiatives; Advised students who are undertaking capstone design project; Participated in curriculum development; Coordinator for several courses; Chair of the Master of Science program revamping committee; Academic advisor for over 30 students; PI managing over 15 students (graduate/undergraduate) performing research funded by IAEA, AUF, CNRS and other institutions; Faculty advisor for the Auto-Sports Students University Club; Secretary of the Mechanical Engineering ABET outcome assessment committee and active member in several other faculty and department committees; Participation in the development of new laboratories such as the particle image velocimetry, climatic chamber and thermo-fluids lab.

Visiting Professor at LARIS, University of Angers – France

Address: Polytech Angers, 62 avenue Notre Dame du Lac, 49000 Angers, France

Phone: +33.02.44.68.75.36

Employment period: 05/2019 – 08/2019, 06/2018 – 08/2018, 07/2017 – 08/2017

Supervisor: Thierry Lemenand (Director of the Buildings and Safety Department)

Duties: Integrated the LARIS Laboratory; Gave seminars on heat and mass transfer enhancement in multifunctional heat exchangers/reactors; Published several journal papers; Advisor for PhD students; Initiated research collaborations and faculty exchange between LARIS and Lebanese Universities.

Visiting Researcher at Gharib Research Group, California Institute of Technology – CA, USA

Address: Caltech, 1200 E California Blvd, Pasadena, CA 91125

Phone: +1.626.395.4453

Employment period: 07/2015

Supervisor: Morteza Gharib (Group Director)

Duties: Integrated Gharib Research Group; Assisted to several seminars on flow instabilities and turbulence.

¹ IMT = Institut Mines Télécom created by the merger of Mines Douai and Télécom Lille in 2017 and it is the largest graduate school of engineering north of Paris.

Assistant Professor of Mechanical Engineering at the Lebanese International University – Lebanon

Address: Lebanese International University, Mousaitbeh, School of Engineering, Beirut, Lebanon

Phone: +961.1.70.68.81

Employment period: 10/2011 – 08/2015

Supervisor: Hicham El Hage (SoE Dean)

Duties: Assistant Professor with duties to teach undergraduate and graduate courses in thermal and fluids engineering, conduct fundamental and applied research, and participate in department, faculty and university initiatives; Research leader for the Thermo-Fluids Research Group; Advised students who are undertaking capstone design project and master thesis; Participated in curriculum development; Coordinator for several courses covered in nine campuses; Active member in several faculty and department committees; Participated in numerous strategic planning committees; Leading the development of new laboratories such as the computational fluid dynamics lab; Coordinator with the Lebanese National LIRA program aiming to bridge relationship between the university and prominent industries.

Visiting Professor at the Industrial Energy Department, IMT Lille Douai – France

Address: DEI, IMT Lille Douai, 941 Rue Charles Bourseul, 59500 Douai, France

Phone: +33.3.27.71.22.22

Employment period: 07/2016 – 09/2016, 07/2014 – 09/2014, 07/2012 – 09/2012

Supervisor: Jean-Luc Harion (DEI Director)

Duties: Integrated the Industrial Energy Department; Gave several seminars on Computational Fluid Dynamics and Fluid/Structure interaction problems; Published several journal papers; Advisor for PhD students; Initiated several research collaborations and faculty exchange with Lebanese Universities.

Postdoctoral Fellow at the Industrial Energy Department, IMT Lille Douai – France

Address: DEI, IMT Lille Douai, 941 Rue Charles Bourseul, 59500 Douai, France

Phone: +33.3.27.71.22.22

Employment period: 12/2010 – 09/2011

Supervisor: Jean-Luc Harion (DEI Director)

Duties: Postdoctoral fellow with duties to develop numerical code under OpenFOAM for strongly coupled fluid/structure interaction problems; Participated in supervising PhD students; Published several journal papers and assisted Professor Jean-Luc Harion in various industrial research tasks.

Graduate Teaching Experience at the University of Nantes – France

Address: Polytech Nantes, Rue Christian Pauc, 44300 Nantes, France

Phone: +33.2.40.68.32.00

Employment period: 12/2010 – 09/2011

Supervisor: Hassan Peerhossaini (LTeN Director)

Duties: Participated in supervising student capstone design project and in master theses; gave laboratory courses on turbomachinery, hydraulics, mechanical systems, and fluid dynamics; managed the library of the LTeN laboratory; assisted Professor Hassan Peerhossaini in several teaching and research tasks.

Education

Date	Degree	Institution
2018 – 2019	Habilitation to Direct Research (HDR)² Mechanical Engineering <i>Title: Heat and mass transfer in complex multiphysics flows</i> <i>Original French degree title and field: Habilitation à Diriger des Recherches en Génie Mécanique avec qualification en Section 60 (20160215510)</i>	University of Angers, France
2007 – 2010	Doctor of Philosophy Energy and Thermal Sciences <i>Title: Experimental and numerical study of turbulent mixing and heat transfer phenomena in presence of vorticity</i> <i>Original French degree title and field: Doctorat en Thermique-Energétique</i>	University of Nantes, France
2006 – 2007	Master of Science Energy and Thermal Sciences <i>Title: Dispersion of immiscible fluids in chaotic advection flows</i> <i>Original French degree title and field: Diplôme de Master en Thermique-Energétique</i>	University of Nantes, France
2002 – 2007	Master of Science³ Mechanical Engineering <i>Original French degree title and field: Diplôme d'Ingénieur en Génie Mécanique</i>	ULFG2 Roumieh, Lebanese University, Lebanon

Research Grants

Date	Grant Title/Role	Funding Agency ⁴	Funds
2019	Optimization of sine-helical chaotic heat exchanger <i>co-PI</i>	University of Pau, France CNRS Lebanon	30,000 Euros
2018	Research and training in thermonuclear fusion <i>Scientific Staff</i>	IAEA, Vienna, Austria	40,000 Euros
2018	Caleo Dräger Infant Incubator	Drägerwerk AG Germany	Hardware
2017	Design of a 3D printed preterm thermal manikin <i>PI</i>	AUF CNRS Lebanon NDU	27,000 Euros
2017	Shape optimization of vortex generators for heat transfer enhancement <i>co-PI</i>		27,000 Euros
2017	Heat and mass transfer in screen-type static mixers <i>PI</i>	PHC CEDRE	17,400 Euros
2017	Design and optimization of multifunctional heat exchangers/reactors <i>PI</i>	University of Angers	3,000 Euros
2013	Design of a smart heat exchanger with auto-adaptive vortex generators <i>co-PI</i>	Mines Douai	27,000 Euros

² This is the highest degree awarded in France after a PhD and it is required to self-direct PhD students and to obtain a professorship in French and many European Universities.

³ This is a 5-year Diplôme d'Ingénieur degree following the French system; it includes both undergraduate and graduate courses. Total credits are 218 credits, beyond the freshman year, with an additional semester dedicated for the capstone design. Please check this link for all curriculum/classes details: <http://www.ulfg.ul.edu.lb/courses?major=4>

⁴ CNRS = Centre National de Recherche Scientifique – IAEA = International Atomic Energy Agency – AUF = Agence Universitaire de la Francophonie – NDU = Notre Dame University-Louaize – PHC CEDRE = Partenariat Hubert Curien Franco-Libanais – PIE = Programme Interdisciplinaire Energie – ADEME = Agence de l'Environnement et de la Maitrise de l'Energie – ANR = Agence National de la Recherche

2013	Design and optimization of novel crossflow heat exchanger for heat recovery <i>co-PI</i>	CNRS Lebanon	10,000 USD
2012	Heat and mass transfer enhancement using flexible vortex generators (Vorflex 2) <i>co-PI</i>	Mines Douai	27,000 Euros
2010	Modeling of fluid-structure interaction problems in presence of streamwise vortices (Vorflex 1) <i>co-PI</i>	PIE CNRS	10,000 Euros
2009	PhD thesis grant	CNRS France	27,000 Euros
2007	PhD thesis grant	ADEME France	27,000 Euros
2007	Graduate Research Assistant	ANR CP2D, France	10,000 Euros

Awards

Honor/Award	Bestowed by	Year
Very honorable distinction	HDR jury committee	2019
Editor's pick https://doi.org/10.1063/1.5098367	Physics of Fluids (IOP)	2019
Editor's pick https://doi.org/10.1063/1.5089733	Physics of Plasmas (IOP)	2019
Best Paper Award at the Global Health Conference	IARIA	2016
Very honorable distinction	PhD jury committee	2010
Highest Grade	Master of Science Polytech Nantes	2007

Publications

The publication list below does not include confidential work with the French Commissariat of Atomic Energy (CEA) and Tokamak Energy (UK) on the development of new probes and bolometers to detect the plasma properties inside Tokamaks. I have a total of 998 citations and an h-index of 19 according to [Google Scholar](#) as of November 18, 2020.

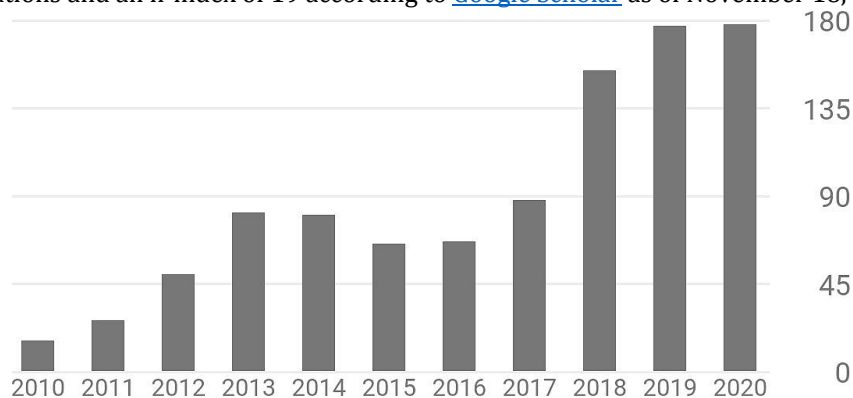


Figure 1: Citations retrieved from my [Google Scholar](#) page on November 18, 2020

The table below summarizes the total publications portfolio listed in detail in the following pages.

Type	Count
Peer reviewed journal papers	54
Conference proceedings	51
Conference with oral presentation	4
Conference with poster presentation	3
Patents	3

Peer Reviewed Journal Papers

- J1. R. Himo, C. Bou-Mosleh, **C. Habchi**, Aerodynamic performance enhancement of an Airfoil using trapezoidal vortex generators. Aircraft Engineering and Aerospace Technology, In Press, 2020. <https://doi.org/10.1108/AEAT-01-2020-0021>
- J2. A. Hannouch, **C. Habchi**, T. Lemenand, K. Khoury, Numerical Evaluation of the Convective and Radiative Heat Transfer Coefficients for Preterm Neonate Body Segments inside an Incubator. Building and Environment, 2020, 183, 107085. <https://doi.org/10.1016/j.buildenv.2020.107085>
- J3. H. Karkaba, T. Dbouk, **C. Habchi**, S. Russeil, T. Lemenand, D. Bougeard, Multi objective optimization of vortex generators for heat transfer enhancement using large design space exploration. Chemical Engineering and Processing, 2020, 154, 107982. <https://doi.org/10.1016/j.cep.2020.107982>
- J4. M. Oneissi, E. Bouhoubeiny, S. Russeil, D. Bougeard, T. Lemenand, **C. Habchi**, Experimental analysis by stereo-PIV of the development of streamwise vortices downstream of rectangular winglets. Heat and Mass Transfer, In Press. <https://doi.org/10.1007/s00231-020-02874-1>
- J5. A. Hannouch, T. Lemenand, K. Khoury, **C. Habchi**, Heat and mass transfer of preterm neonates nursed inside incubators - A review. Thermal Science and Engineering Progress, 2020, 18, 100553. <https://doi.org/10.1016/j.tsep.2020.100553>
- J6. I. Mjallal, M. Hammoud, **C. Habchi**, T. Lemenand, Cost effective device to characterize phase change materials. Measurement Science and Technology, 2020, 31, 025903. <https://doi.org/10.1088/1361-6501/ab3d19>
- J7. S. Ali, Z.A. Shami, A. Badran, **C. Habchi**, Heat Transfer Enhancement Using Second Mode Self-Oscillating Structures. International Journal of Numerical Methods for Heat and Fluid Flow, 2019, 51, 025507. <https://doi.org/10.1108/HFF-07-2019-0583>
- J8. **C. Habchi**, A. Ghanem, T. Lemenand, D. Della Valle, H. Peerhossaini, Mixing performance in Split-And-Recombine Milli-Static Mixers - A numerical analysis. Chemical Engineering Research and Design, 2019, 142, 298-306. <https://doi.org/10.1016/j.cherd.2018.12.010>
- J9. T. Dbouk, **C. Habchi**, On the mixing enhancement in concentrated non-colloidal isodense suspensions of rigid particles using helical coiled and chaotic twisted pipes: A numerical investigation. Chemical Engineering and Processing, 2019, 141, 107540. <https://doi.org/10.1016/j.cep.2019.107540>
- J10. G. Antar, A. Lalti, **C. Habchi**, The spontaneous breaking of axisymmetry in shallow rotating flows. Physics of Fluids, 2019, 31, 074104. <https://doi.org/10.1063/1.5098367>
- J11. G. Antar, A. Bahja, N. Metni, **C. Habchi**, The effect of adding an axial magnetic field on the expansion of a laser-produced plasma. Physics of Plasma, 2019, 26, 043515. <https://doi.org/10.1063/1.5089733>
- J12. S. Ali, **C. Habchi**, T. Lemenand, J.L. Harion, Towards Self-Sustained Oscillations of Multiple Flexible Vortex Generators. Fluid Dynamics Research, 2019, 51, 025507. <https://doi.org/10.1088/1873-7005/aaeced>
- J13. M. Oneissi, **C. Habchi**, S. Russeil, D. Bougeard, T. Lemenand, Inclination Angle Optimization for Inclined Projected Winglet Pair Vortex Generator. Journal of Thermal Science and Engineering Applications, 2019, 11, 0110141-01101410. <https://doi.org/10.1115/1.4041438>
- J14. **C. Habchi**, F. Azizi, Heat transfer and turbulent mixing characterization in screen-static mixers. International Journal of Thermal Sciences, 2018, 134, 208-215. <https://doi.org/10.1016/j.ijthermalsci.2018.08.016>
- J15. M. Oneissi, **C. Habchi**, S. Russeil, T. Lemenand, D. Bougeard, Heat transfer enhancement of inclined projected winglet pair vortex generators with protrusions. International Journal of Thermal Sciences, 2018, 134, 541-551. <https://doi.org/10.1016/j.ijthermalsci.2018.08.032>
- J16. R. Himo, **C. Habchi**, Coherent flow structures and heat transfer in a duct with electromagnetic forcing. Physics of Fluids, 2018, 30, 043605. <https://doi.org/10.1063/1.5021415>
- J17. T. Lemenand, **C. Habchi**, D. Della Valle, H. Peerhossaini, Vorticity and convective heat transfer downstream of a vortex generator. International Journal of Thermal Sciences, 2018, 125, 342-349. <https://doi.org/10.1016/j.ijthermalsci.2017.11.021>

- J18. B. Mehra, J.V. Simo Tala, **C. Habchi**, J-L. Harion, Local field synergy analysis of conjugate heat transfer for different plane fin configurations. *Applied Thermal Engineering*, 2018, 130, 1105-1120. <https://doi.org/10.1016/j.applthermaleng.2017.11.064>
- J19. S. Ghanimeh, C. Abou Khalil, C. Bou Mosleh, **C. Habchi**, Optimized anaerobic-aerobic sequential system for the treatment of food waste and wastewater. *Waste Management*, 2017, 71, 767-774. <https://doi.org/10.1016/j.wasman.2017.06.027>
- J20. A. Khanjian, **C. Habchi**, S. Russeil, S. Bougeard, T. Lemenand, Effect of the angle of attack of a rectangular wing on the heat transfer enhancement in channel flow at low Reynolds number. *Heat and Mass Transfer*, 2017, 1-12. <https://doi.org/10.1007/s00231-017-2244-8>
- J21. S. Ali, **C. Habchi**, S. Menanteau, T. Lemenand, J.L. Harion, Three-dimensional numerical study of heat transfer and mixing enhancement in a circular pipe using self-sustained oscillating flexible vorticity generators. *Chemical Engineering Science*, 2017, 162, 152-174. <https://doi.org/10.1016/j.ces.2016.12.039>
- J22. A. Khanjian, **C. Habchi**, S. Russeil, S. Bougeard, T. Lemenand, Effect of rectangular winglet pair roll angle on the heat transfer enhancement in laminar channel flow. *International Journal of Thermal Sciences*, 2017, 114, 1-14. <https://doi.org/10.1016/j.ijthermalsci.2016.12.010>
- J23. T. Lemenand, D. Della Valle, **C. Habchi**, H. Peerhossaini, Micro-mixing measurement by chemical probe in homogeneous and isotropic turbulence. *Chemical Engineering Journal*, 2017, 314, 453-465. <https://doi.org/10.1016/j.cej.2016.12.001>
- J24. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini, Turbulence statistics downstream of a vorticity generator at low Reynolds numbers. *Physics of Fluids*, 2016, 28, 105106. <https://doi.org/10.1063/1.4964924>
- J25. **C. Habchi**, G. Antar, The Dynamics of Two-Dimensional Turbulence Excited at Two Scales using Electromagnetic Forces. *Physics of Fluids*, 2016, 28, 055102. <https://doi.org/10.1063/1.4948372>
- J26. M. Oneissi, **C. Habchi**, S. Russeil, S. Bougeard, T. Lemenand, Novel design of delta winglet pair vortex generator for heat transfer enhancement. *International Journal of Thermal Sciences*, 2016, 109, 1-9. <https://doi.org/10.1016/j.ijthermalsci.2016.05.025>
- J27. S. Ali, S. Menanteau, **C. Habchi**, T. Lemenand, J.L. Harion, Heat Transfer and Mixing Enhancement by Using Multiple Freely Oscillating Flexible Vortex Generators. *Applied Thermal Engineering*, 2016, 105, 276-289. <https://doi.org/10.1016/j.applthermaleng.2016.04.130>
- J28. **C. Habchi**, G. Antar, Direct numerical simulation of electromagnetically forced flows using OpenFOAM. *Computers and Fluids*, 2015, 116, 1-9. <https://doi.org/10.1016/j.compfluid.2015.04.011>
- J29. **C. Habchi**, J.L. Harion, Enhanced mixing by optimized streamwise and angular positioning of longitudinal vorticity, *Applied Thermal Engineering*, 2015, 86, 269-280. <https://doi.org/10.1016/j.applthermaleng.2015.04.039>
- J30. S. Ali, **C. Habchi**, S. Menanteau, T. Lemenand, J.L. Harion, Heat Transfer and Mixing Enhancement by Free Elastic Flaps Oscillation. *International Journal of Heat and Mass Transfer*, 2015, 85, 250-264. <https://doi.org/10.1016/j.ijheatmasstransfer.2015.01.122>
- J31. **C. Habchi**, T. Lemenand, D. Della Valle, A. Al Shaer, H. Peerhossaini, Experimental Study of the Flow Field behind a Perforated Vortex Generator, *Journal Applied Mechanics and Technical Physics*, 2015, 16, 221-229. <https://doi.org/10.1134/S0021894415040045>
- J32. M. Khaled, M. Gad El Rab, **C. Habchi**, A. Al Shaer, A. Elmarakbi, F. Harambat, H. Peerhossaini, Analysis and modeling of the thermal soak phase of a vehicle - Temperature and heat flux measurements. *International Journal of Automotive Technology*, 2015, 16, 221-229. <https://doi.org/10.1007/s12239-015-0024-3>
- J33. L. Pacheco, D. Della-Valle, O. Le Corre, **C. Habchi**, T. Lemenand, H. Peerhossaini, Modeling Open-Flow Steam Reforming of Methanol Over Cu/ZnO/Al₂O₃ Catalyst in an Axisymmetric Reactor. *Journal of Applied Fluid Mechanics*, 2015, 8, Page: 20353. <https://doi.org/10.36884/jafm.8.01.20353>

- J34. **C. Habchi**, J.L. Harion, Residence time distribution and heat transfer in circular pipe fitted with longitudinal rectangular wings. *International Journal of Heat and Mass Transfer*, 2014, 74, 13-24. <https://doi.org/10.1016/j.ijheatmasstransfer.2014.03.007>
- J35. T. Lemenand, **C. Habchi**, D. Della Valle, J. Bellettre, H. Peerhossaini. Mass transfer and emulsification by chaotic advection. *International Journal of Heat and Mass Transfer*, 2014, 71, 228-235. <https://doi.org/10.1016/j.ijheatmasstransfer.2013.12.015>
- J36. A. Ghanem, **C. Habchi**, T. Lemenand, D. Della Valle, Hassan Peerhossaini. Mixing Performances in Swirl Flow and Corrugated Channel Reactors. *Chemical Engineering Research and Design*, 2014, 92, 2213-2222. <https://doi.org/10.1016/j.cherd.2014.01.014>
- J37. **C. Habchi**, T. Lemenand, D. Della Valle, M. Khaled, A. Elmarakbi, H. Peerhossaini. Mixing assessment by chemical probe. *Journal of Industrial and Engineering Chemistry*, 2014, 20, 1411-1420. <https://doi.org/10.1016/j.jiec.2013.07.026>
- J38. **C. Habchi**, M. Khaled, T. Lemenand, D. Della Valle, A. Elmarakbi, H. Peerhossaini. A semi-analytical approach for temperature distribution in Dean flow. *Heat and Mass Transfer*, 2014, 50, 23-30. <https://doi.org/10.1007/s00231-013-1222-z>
- J39. M. Khaled, **C. Habchi**, F. Harambat, A. Elmarakbi, H. Peerhossaini. Leakage effects in car underhood aerothermal management: temperature and heat flux analysis. *Heat and Mass Transfer*, 2014, 59, 1455-1464. <https://doi.org/10.1007/s00231-014-1347-8>
- J40. F. Hachem, M. Khaled, M. Ramadan, **C. Habchi**, Boundary Layer Development on a Concave Surface: Flow Visualization and Hot Wire Velocity Measurements. *Journal of Energy and Power Engineering*, 2014, 8, 1177-1182. <https://doi.org/10.17265/1934-8975/2014.07.002>
- J41. **C. Habchi**, J.L. Harion, S. Russeil, D. Bougeard, F. Hachem, A. Elmarakbi. Chaotic mixing by longitudinal vorticity. *Chemical Engineering Science*, 2013, 104, 439-450. <https://doi.org/10.1016/j.ces.2013.09.032>
- J42. **C. Habchi**, S. Russeil, D. Bougeard, J.L. Harion, T. Lemenand, D. Della Valle, H. Peerhossaini. Partitioned solver for strongly coupled fluid-structure interaction. *Computers and Fluids*, 2013, 71, 306-319. <https://doi.org/10.1016/j.compfluid.2012.11.004>
- J43. A. Ghanem, **C. Habchi**, T. Lemenand, D. Della Valle, Hassan Peerhossaini. Energy efficiency in process industry – High-Efficiency Vortex (HEV) multifunctional heat exchanger. *Renewable Energy Journal*, 2013, 56, 96-104. <https://doi.org/10.1016/j.renene.2012.09.024>
- J44. **C. Habchi**, S. Russeil, D. Bougeard, J.-L. Harion, T. Lemenand, D. Della Valle, H. Peerhossaini. Enhancing heat transfer in vortex generator-type multifunctional heat exchangers. *Applied Thermal Engineering*, 2012, 38, 14-25. <https://doi.org/10.1016/j.applthermaleng.2012.01.020>
- J45. A. Ghanem, C. Habchi, T. Lemenand, D. Della Valle, Hassan Peerhossaini, Heat-Transfer Enhancement by Artificially Generated Streamwise Vorticity. *Journal of Physics: Conference Series*, 2012, 395, 012051. <https://doi.org/10.1088/1742-6596/395/1/012051>
- J46. A. Mardaru, K. Souidi, A. Marcati, G. Jinescu, **C. Habchi**, D. Della Valle, G. Djelveh. Effect of impellers configuration on the gas dispersion of high-viscosity fluid using Narrow Annular Gap Unit. Part 2: numerical approach. *Chemical Engineering Science*, 2012, 75, 63-74. <https://doi.org/10.1016/j.ces.2012.02.056>
- J47. **C. Habchi**, T. Lemenand, D. Della Valle, L. Pacheco, O. Le Corre, H. Peerhossaini. Entropy production and field synergy principle in turbulent vortical flows. *International Journal of Thermal Sciences*, 2011, 50, 2365-2376. <https://doi.org/10.1016/j.ijthermalsci.2011.07.012>
- J48. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. A new adaptive procedure for using chemical probes to characterize mixing. *Chemical Engineering Science*, 2011, 66, 3540-3550. <https://doi.org/10.1016/j.ces.2011.04.019>
- J49. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Turbulent mixing and residence time distribution in novel multifunctional heat exchangers-reactors. *Chemical Engineering and Processing*, 2010, 49, 1066-1075. <https://doi.org/10.1016/j.cep.2010.08.007>

- J50. H. Mohand Kaci, **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Flow structure and heat transfer induced by embedded vorticity. *International Journal of Heat and Mass Transfer*, 2010, 53, 3575-3584. <https://doi.org/10.1016/j.ijheatmasstransfer.2010.04.029>
- J51. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Alternating mixing tabs in multifunctional heat exchanger-reactor. *Chemical Engineering and Processing*. 2010, 49, 653-661. <https://doi.org/10.1016/j.cep.2009.07.003>
- J52. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Turbulence behavior of artificially generated vorticity. *Journal of Turbulence*, 2010, 11, Number 36. <https://doi.org/10.1080/14685248.2010.510841>
- J53. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Liquid-liquid dispersion in a chaotic advection flow. *International Journal of Multiphase Flow*, 2009, 35, 485-497. <https://doi.org/10.1016/j.ijmultiphaseflow.2009.02.019>
- J54. **C. Habchi**, S. Ouarets, T. Lemenand, D. Della Valle, J. Bellettre, H. Peerhossaini. Influence of viscosity ratio on droplets formation in a chaotic advection flow. *International Journal of Chemical Reactor Engineering*, 2009, 7, Number 50. <https://doi.org/10.2202/1542-6580.2075>

Conference Proceedings

- C1. **C. Habchi**, F. Moukalled. Using AC Return Air for Cooling PV Modules in Hot Climate Regions. ASHRAE, Beirut, Lebanon, (Virtual) 2020.
- C2. A. Aldor, Y. Moguen, K. El Omari, **C. Habchi**, P.H. Cocquet, Y. Le Guer. A novel wavy channel heat exchanger: the sine-helical mixer. ENFHT, Lisbon, Portugal, (Virtual) 2020.
- C3. R. Himo, **C. Habchi**. On the validity of the field synergy principle in elliptic flows. CFM, Brest, France, 2019.
- C4. R. Himo, **C. Habchi**. Heat Transfer Enhancement with Lorentz Forces. SFT, Nantes, France, 2019.
- C5. A. Hannouch, T. Lemenand, K. Khoury, **C. Habchi**. Coupled radiative and convective heat losses from Preterm Infant inside an incubator with radiant heaters. Coupled Problems, Sitges, Spain, 2019.
- C6. A. Hannouch, T. Lemenand, K. Khoury, **C. Habchi**. Hygrothermal Comfort of Neonates Nursed inside Incubators. SFT, Nantes, France, 2019.
- C7. H. Karkaba, **C. Habchi**, A. Takch. Numerical Analysis of Different Indoor Heating Methods. ACTEA, Lebanon, 2019.
- C8. A. Rustom, K. Al Raii, N. Metni, G. Antar, **C. Habchi**. Design of a Pendulum Based Micro-Thrust Measuring Device Application to Plasma Microthrusters. ACTEA, Lebanon, 2019.
- C9. **C. Habchi**, T. Lemenand, F. Azizi, Mixing Enhancement in a Novel Type of Split and Recombine Static Mixer. IMECE, Pittsburgh, PA, USA, 2018.
- C10. C. Bou-Mosleh, R. Himo, **C. Habchi**, CFD-Based Aerodynamic Analysis of the Flow Past an Airfoil with Passive Trapezoidal and Perforated Vortex Generators. IMECE, Pittsburgh, PA, USA, 2018.
- C11. R. Himo, **C. Habchi**. Revisiting the field synergy principle in an elliptic laminar flow. 3rd MHMT'18, Budapest, Hungary, 2018.
- C12. B. Mehra, J.V. Simo Tala, **C. Habchi**, J.L Harion. Analyse des transferts thermiques conjugués de trois géométries d'ailettes planes selon le principe local de synergie de champ. 13th CIFQ, Saint-Lô, France, 2017.
- C13. B. Mehra, J.V. Simo Tala, **C. Habchi**, J.L Harion. Analyse des performances de transfert d'une ailette plane selon le principe local de synergie. SFT, Marseille, France, 2017.
- C14. M. Oneissi, A. Khanjian, D. Bougeard, **C. Habchi**, S. Russeil, T. Lemenand. Intensification des transferts par génération de vorticit . 13th CIFQ, Saint-L , France, 2017.
- C15. E. Karam, P. Moukarzel, M. Chamoun, **C. Habchi**, C. Bou-Mosleh, Design of a hybrid photovoltaic thermal system in Lebanon, 3rd E3PE, Beirut, Lebanon, 2017.
- C16. **C. Habchi**, F. Azizi. Hydrodynamic and heat transfer characterization of screen-type static mixers. Eurotherm 106, Paris, France, 2016.

- C17. A. Hannouch, V. Militian, M. Hajj-Hassan, **C. Habchi**. Computational fluid dynamics for a closed infant incubator. 22nd LAAS International Science Conference, USEK, Kasslik, Lebanon, 2016.
- C18. M. Oneissi, **C. Habchi**, S. Russeil, D. Bougeard, T. Lemenand. Novel design of delta winglet pair vortex generator for heat transfer enhancement. Eurotherm 106, Paris, France, 2016.
- C19. A. Khanjian, **C. Habchi**, S. Russeil, D. Bougeard, T. Lemenand. Effect of the angle of attack of a rectangular vortex generator on the heat transfer in a parallel plate flow. 3rd ACTEA Conference, NDU, Zouk Mosbeh, Lebanon, 2016.
- C20. A. Hannouch, V. Militian, M. Hajj-Hassan, H. Khachfe, **C. Habchi**. Computational fluid dynamics model for a closed infant incubator. 5th International Conference on Global Health Challenges, IARIA, Global Health Challenges Conference, Venice, Italy, 2016.
- C21. S. Ali, S. Menanteau, **C. Habchi**, J.L. Harion, T. Lemenand. Etude de l'intensification des transferts de chaleur dans un écoulement laminaire par mise en place de générateurs de vorticit  flexible. 12th CIFQ, Qu bec, Canada, 2015.
- C22. A. Khanjian, **C. Habchi**, S. Russeil, D. Bougeard, T. Lemenand. Heat transfer enhance- ment in channel flow downstream a rectangular winglet pair vortex Generator. 21th LAAS International Science Conference, Beirut, Lebanon, 2015.
- C23. M. Oneissi, **C. Habchi**, S. Russeil, D. Bougeard, T. Lemenand. Novel design of delta winglet pair for heat transfer enhancement. 21th LAAS International Science Conference, Beirut, Lebanon, 2015.
- C24. **C. Habchi**, M. Khaled, M. Ramadan, G. Harika. Fire Management of Underground Car Park Using Computational Fluid Dynamics. ASHRAE ICEBD-MET, Beirut, Lebanon, 2014.
- C25. W. Salameh, A. Assi, **C. Habchi**, M. Khaled. Cooling PV Arrays Using the Return Air Flow of Air Conditioning Systems. ASHRAE ICEBD-MET, Beirut, Lebanon, 2014.
- C26. M. Khaled, M. Ramadan. **C. Habchi**, M. Chouman. Heating water using the recovered waste heat from boilers in HVAC applications – thermal modeling and parametric analysis. ASHRAE ICEBD-MET, Beirut, Lebanon, 2014.
- C27. I. Hamiye, J. Faroukh, H. Hassaui, A. Assi, **C. Habchi**, M. Khaled. Design of micro- hydropower system – case study. 20th LAAS International Science Conference, Beirut, Lebanon, 2014.
- C28. M. Jannoun, M. Hemady, A. Assi, B. Abdul Hay, **C. Habchi**. Phase change materials (PCM) and their applications. 20th LAAS International Science Conference, Beirut, Lebanon, 2014.
- C29. H. Jawhar, A. Assi, B. Abdul Hay, **C. Habchi**. Cooling Photovoltaic Panels Using Phase Change Materials. 20th LAAS International Science Conference, Beirut, Lebanon, 2014.
- C30. **C. Habchi**, M.F. Khalil, T. Lemenand, D. Della Valle, H. Peerhossaini. Flow past a row of trapezoidal tabs: experimental and numerical studies. 11th ICFD, Alexandria, Egypt, 2013.
- C31. F. Hachem, M.F. Khalil, M. Khaled, **C. Habchi**. Boundary layer development on concave surface in gas turbine applications– Flow visualization and hot wire velocity measurements. 11th ICFD, Alexandria, Egypt, 2013.
- C32. M. Khaled, M.F. Khalil, M. Ramadan, **C. Habchi**, F. Harambat. Effect of engine blockage on the flow induced by a vehicle fan in a simplified model. 11th ICFD, Alexandria, Egypt, 2013.
- C33. M. Ramadan, M. Khaled, M.F. Khalil, **C. Habchi**, L. Stainier, A.Leroyer. A conservative algorithm for fluid-structure interaction problems. 11th ICFD, Alexandria, Egypt, 2013.
- C34. **C. Habchi**, H. El Hage, J.L. Harion, S. Russeil, D. Bougeard, S. Menanteau, A. Elmarakbi, H. Peerhossaini. Numerical simulation of the interaction between fluid flow and elastic flaps oscillations. FEDSM ASME, Nevada, USA, 2013.
- C35. **C. Habchi**, S. Russeil, D. Bougeard, J.L. Harion, M. Khaled, A. Elmarakbi. Intensification du transfert de chaleur par des g n rateurs de vorticit  et des protrusions. SFT, Gerardmer, France, 2013.
- C36. J.A. Zambaux, J.L. Harion, S. Russeil, P. Bouvier, **C. Habchi**. Analyse de l'influence de la pr sence d'un coude sur les performances thermo-hydrauliques d'un tube   d formations successives altern es. SFT, G rardmer, France, 2013.

- C37. S. Ali, S. Menanteau, **C. Habchi**, T. Lemenand, J.L. Harion, A. Elmarakbi. Numerical analysis and simulation of the interaction between a Von Karman vortex street and elastic flaps. 21th CFM, Bordeaux, France, 2013.
- C38. F. Hachem, M. Khaled, **C. Habchi**. Visualisation d'écoulement et analyses de profils de vitesse sur une surface concave pour des applications de turbines à gaz. 21th CFM, Bordeaux, France, 2013.
- C39. A. Ghanem, T. Lemenand, D. Della Valle, **C. Habchi**, H. Peerhossaini. Vortically Enhanced Heat Transfer and Mixing: State of the Art and Recent Results. FEDSM ASME, Puerto Rico, USA, 2012.
- C40. A. Ghanem, **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Heat transfer enhancement by artificially generated streamwise vorticity. 6th European Thermal Sciences Conference, Eurotherm, Poitiers, France, 2012.
- C41. A. Ghanem, **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Energy Efficiency in Process Industry – High-Efficiency Vortex (HEV) Multifunctional Heat Exchanger. ICRE, UAE University, Al Ain, UAE, 2012.
- C42. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Turbulence length scales in a vortical flow. AJK, Hamamatsu, Shizuoka, Japan, 2011.
- C43. Z. Anxionnaz, F. Theron, P. Tochon, R. Couturier, P. Bucci, C. Gourdon, M. Cabassud, S. Lomel, G. Bergin, H. Peerhossaini, T. Lemenand, **C. Habchi**. RAPIC project: Toward Competitive heat-exchanger/reactors. EPIC, Manchester, UK, 2011.
- C44. A. Ghanem, **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Intensification des transferts convectifs par vorticité longitudinale. SFT, Perpignan, France, 2011.
- C45. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. On the correlation between vorticity flux and heat transfer coefficient. IHTC, ASME, Washington, USA, 2010.
- C46. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. On the synergy field between velocity vector and temperature gradient in turbulent vortical flows. ThETA 3, Cairo, Egypt, 2010.
- C47. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Intensifying the turbulent kinetic energy dissipation rate by redistributing the streamwise vorticity. GPE-EPIC, Venice, Italy, 2009.
- C48. **C. Habchi**, M. Khaled, T. Lemenand, D. Della Valle, H. Peerhossaini. The temperature distribution in Dean flow: an analytical approach. ICTEA, Abu Dhabi, UAE, 2009.
- C49. **C. Habchi**, S. Ouarets, T. Lemenand, D. Della Valle, J. Bellettre, H. Peerhossaini. Viscosity effects on liquid-liquid dispersion in laminar flows. ICHMT, Hamamat, Tunisia, 2009.
- C50. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Hydrodynamic and thermal behavior for different mixing tabs orientations. SFGP, Marseille, France, 2009.
- C51. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Effets des rangées de perturbateurs pariétaux sur les transferts de chaleur. SFT, Vannes, France, 2009.

Conference with Oral Presentation

01. **C. Habchi**, S. Ali, S. Menanteau, T. Lemenand, J.L. Harion. Numerical Analysis of the Flow and Heat Transfer in a Circular Pipe Fitted with Flexible Vortex Generators. 13th WCCM, New York, USA, 2018.
02. **C. Habchi**, G. Antar. Direct Numerical Simulation of Electromagnetic Forcing Flows. 5th LSMS, Beirut, Lebanon, 2014.
03. T. Lemenand, **C. Habchi**, A. Ghanem, D. Della Valle, H. Peerhossaini. Intensification du mélange et des transferts thermiques par la vorticité, Journée SFT "Echangeurs Thermiques et Multifonctionnels: Enjeux, Applications et Axes de Recherche", Espace Hamelin, Paris, 2011.
04. **C. Habchi**, D. Della Valle, T. Lemenand, H. Peerhossaini. Caractérisation du micromélange par sonde chimique dans les échangeur/réacteurs multifonctionnels, EN- ERGA^{IA}, the International Renewable Energies Exhibition, Montpellier, France, 2009.

Conference with Poster Presentation

- P1. H. Peerhossaini, **C. Habchi**, T. Lemenand, D. Della Valle. Défis et perspectives pour les échangeurs de chaleur, Colloques Energie CNRS, Montpellier, France, 2011.

- P2. T. Lemenand, **C. Habchi**, A. Ghanem, S. Serra, J.L. Harion, D. Della Valle, H. Peerhossaini. Concept innovant d'échangeurs-réacteurs de haute efficacité par contrôle dynamique passif avec des générateurs de vorticités flexibles, Colloques Energie CNRS, Montpellier, 2011.
- P3. A. Ghanem, **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Enhanced transfer phenomena by artificially generated vorticity in turbulent flows, 5th European Postgraduate Fluid Dynamics Conference, Göttingen, Germany, 2011.

Patents

- E1. J.L. Harion, S. Ali, **C. Habchi**. Amélioration des performances par une modification passive-dynamique du fonctionnement d'échangeurs de chaleur, Enveloppe Soleau, no 56551, 2016.
- E2. **C. Habchi**, T. Lemenand, D. Della Valle, H. Peerhossaini. Nouvelles géométries pour l'intensification de l'efficacité énergétique d'un échangeur/réacteur multifonctionnel : Rangées alternées - Rangées décalées. Enveloppe Soleau, no 356995, 2009.
- E3. J.L. Harion, H. Peerhossaini, **C. Habchi**, T. Lemenand, D. Della Valle. Echangeurs-réacteurs multifonctionnels continus: amélioration des performances par une modification passive dynamique du fonctionnement. Enveloppe Soleau, no 348694, 2009.

Student Supervision

The graph below summarizes my subsequent research supervision listed in detail in the following pages.

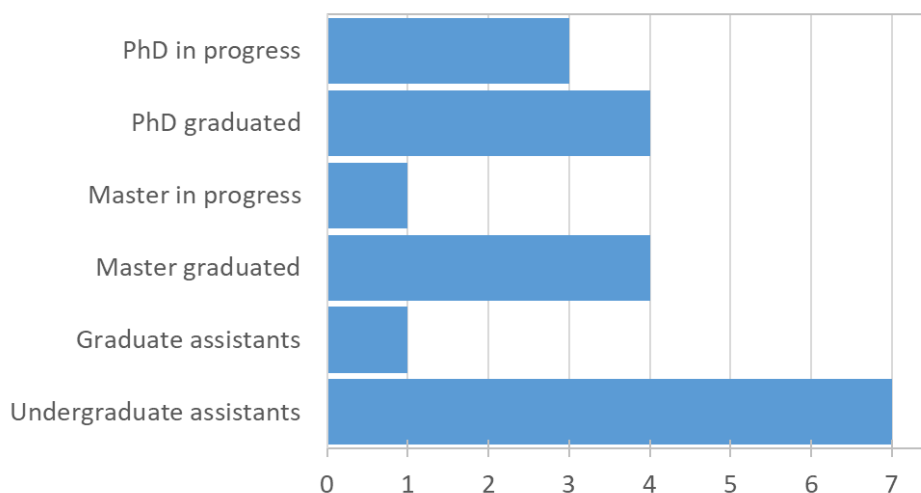


Figure 2: Graph summarizing the types of student supervision

PhD - Graduated		
Date	Name	Topic
2015-2019	Bineet Mehra	Enhancement and optimization of thermal components based on local field synergy approach
2013-2019	Assadour Khanjian	Autoadaptive vortex generators for smart heat exchangers
2014-2017	Mohamad Oneissi	Heat transfer enhancement by multi-scale vortex generators
2012-2015	Samer Ali	Innovative concept of multifunctional heat exchanger/reactor by passive dynamic control using flexible vortex generators

PhD - In progress		
Date	Name	Topic
2019	Abbas El Dor	Optimization of the performance of a new multifunctional exchanger with sinehelical channels
2018	Ibrahim Mjallal	Electronic components cooling using novel phase change material

2017	Hassan Karkaba	Design space exploration to find optimal designs of vortex generators for heat transfer enhancement
------	----------------	---

Master – In progress

Date	Name	Topic
2020	Jaysen El Khazen	Simultaneous Hydrogen Production Using Water Electrolysis Combined with Solar Panels

Master – Graduated

Date	Name	Topic
2015	Aziza Hannouch	Numerical modeling of the heat transfer inside infant incubators
2014	Hassan Karkaba	Numerical modeling of radiative and convective air conditioning
2010	Sofiane Ouarets	Immiscible liquid/liquid dispersion in chaotic advection flow
2009	Bilal Cherim	PIV and LDV measurement of the flow structure downstream a perforated vortex generator

Graduate Research Assistants

Date	Name	Topic
2020	Sangmin Lim (UCLA)	Machine learning assisted resistive force theory
2019	Imad Alawiye	Design and PID control of 3D printed preterm neonate thermal manikin

Undergraduate Research Assistants

Date	Name	Topic
2020	Bhruhu Mallajosyula (UCLA)	Machine learning assisted resistive force theory
2020	Jad Samaha	Numerical modeling of pulsed laser ablation using OpenFoam
2020	Charbel Chemaly	PID control of a 3D printed preterm neonate thermal manikin
2018-2020	Karen Al Asaad Selim Khoury	Experimental investigation of the heat transfer inside infant incubators using a thermal manikin of a preterm neonate
2017-2018	Alexios Rustom Khalil Al Raii	Design of an interferometer for micro-thrust measurement inside a vacuum chamber
2017-2018	Rawad Himo	Lift enhancement using vortex generators on an airplane wing
2015-2016	Rawad Himo	Numerical simulation of MHD flows

Teaching

I have 12 years of teaching experience with a total of over 4000 class hours and 350 laboratory hours mainly in Universities adopting the American system for higher education with ABET and NECHE accreditations. Through my experience and my multi-cultural immersion, I realized that teaching is a fundamental part of learning for me as much as for my students. This makes teaching, in my opinion, a continuous learning process. During this journey I taught a wide range of classes from fundamental to technically challenging courses summarized in the table below.

Teaching Portfolio

Name	Type	Year	Institution ⁵
Turbomachinery	Lab	2008-2010	Polytech Nantes
Mechanics	Lab	2008-2010	Polytech Nantes
Fluid Mechanics	Lab	2008-2009	ONIRIS Nantes
CAD	Lab	2011-2012	LIU
Thermodynamics 1	Undergraduate	2015-2019	NDU
		2011-2014	LIU

⁵ Polytech Nantes = Ecole Polytechnique de l'Université de Nantes / ONIRIS = Ecole Nationale Vétérinaire Oniris / LIU = Lebanese International University / NDU = Notre Dame University-Louaize

Thermodynamics 2	Undergraduate	2015-2019	NDU
		2013-2014	LIU
Fluid Mechanics 1	Undergraduate	2015-2018	NDU
		2011-2014	LIU
Fluid Mechanics 2	Graduate	2012-2014	LIU
Heat Transfer	Undergraduate	2015-2020	NDU
		2011-2014	LIU
Internal Combustion Engines	Technical Elective	2016-2018	NDU
		2013-2014	LIU
Design and Optimization of Thermal Systems	Technical Elective	2019-2020	NDU
Computational Fluid Dynamics	Graduate	Fall 2019	NDU
Micro Flows and Heat Transfer	Graduate	Fall 2020	NDU
Research Methods in Mechanical Engineering	Graduate	Spring 2020	NDU

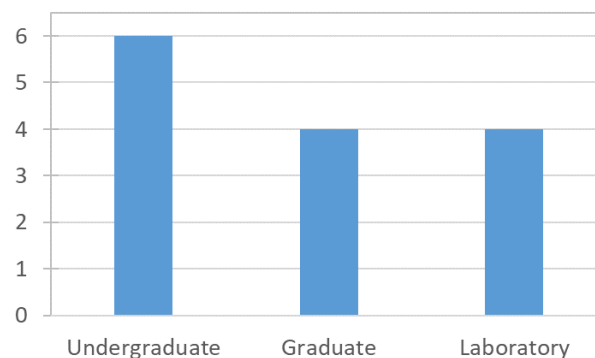


Figure 3: Graph summarizing the number of different courses I have taught

Classroom Teaching Standards

- Interactive class to better engage the students
- Include applied project whenever applicable
- Usage of IT and visual aids such as videos, 3D interactive animations and Blackboard
- Include results from recent research papers whenever applicable
- Teach the students how to develop problem solving strategies and to understand the course fundamental concepts
- Teach the students how to use specific software in order to apply their knowledge in solving problems by using numerical simulations
- Continuous self-improvement of the courses
- Assessment based delivery of course outcomes

New Course Development

- *Thermodynamics and Heat Transfer*: this course was developed to replace the standard thermodynamics course given by the Mechanical Engineering Department for electrical engineering students at NDU. This course hence focuses on applying thermodynamics and heat transfer in electrical engineering problems.
- *Optimization of Thermal Systems*: this course was developed as technical elective course. It focuses on applying calculus and search optimization methods to optimize thermal systems such as heat exchangers, turbines and compressors. Several applied projects are given in this course.

Programs and Minor Development

- Minor in Renewable Energy for Mechanical Engineering students at NDU
- Master of Science in Engineering Management and Innovation

Undergraduate ABET Accreditation

I believe in accreditation and assessment-based delivery. I am the secretary and active member of the Mechanical Engineering Department Outcome Assessment Committee at NDU since 2016. I developed a tool for the course learning outcome assessment correlated to the ABET students' outcomes and I use it for all courses I teach.

Students Capstone

I have mentored over 30 students conducting their capstone engineering design project at the Lebanese International University and at Notre Dame University-Louaize some of them are in collaboration with Industries and hence dealing with

practical engineering applications. During their projects, students are required to incorporate relevant engineering design standards such as ASME, ASHRAE, FEDSM and ASTM standards,

Students Committees

I am continuously serving on multiple student committees during capstone project, Master Theses and PhD Theses at IMT Lille Douai, Angers University, Strasbourg University, American University of Beirut, Lebanese International University and Notre Dame University-Louaize.

Institutional Services

Year	Type	Institution ⁶
2018-2020	Faculty of Engineering Graduate Committee (member)	NDU
2015-2020	Mechanical Engineering Department Curriculum Committee (secretary)	NDU
2016-2020	Mechanical Engineering Department ABET Outcome Assessment Committee (secretary)	NDU
2019-2020	Master of Science in Mechanical Engineering Revamping Committee (chair)	NDU
2018-2020	University Task Force Pertaining to Mount Lebanon Air Pollution (member)	NDU
2015-2020	Course Coordinator of the Thermo-Fluids Track	NDU
2017	Master of Science in Engineering Management and Innovation (member)	NDU
2016	Minor in Renewable Engineering (member)	NDU
2013-2015	Research leader for the Thermo-Fluids Research Group	LIU
2015-2020	Course Coordinator of the Thermo-Fluids Track	LIU
2008-2010	Library Coordinator	LTeN

Communities

I am an active member in several professional and scientific communities. I serve as a reviewer for various scientific journals such as ASME Journal of Fluids Engineering, Physics of Fluids, Journal of Fluids and Structures, International Journal for Numerical Methods in Fluids, International Journal of Heat and Mass Transfer, International Journal of Thermal Sciences, International Journal of Heat and Fluid Flow, Applied Thermal Engineering, AIChE Journal, Chemical Engineering Science, Chemical Engineering and Processing, Energy and many others... I also serve as reviewer for research grants submitted to the French National Research Agency (ANR), PHC CEDRE Program, IdEx Projects at Strasbourg University, and the Lebanese National Research Center (CNRS). I am a member in several professional communities such as the American Society of Mechanical Engineers, CFD Wiki, OpenFOAM extend project, the Lebanese Standards Institution, and the Order of Engineers and Architectures in Lebanon.

American Society of Mechanical Engineers (ASME)

- Attended 4 International ASME conferences with published proceedings
- Published several papers in ASME journals
- Provided paper reviews for ASME conferences
- Provided paper reviews for ASME journal papers
- Participated in NDU ASME student club events

Lebanese Standards Institution (LIBNOR)

- Member in the TC 3018 HVAC committee
- Reviewing and updating standards for HVAC systems based on international standards such as ASHRAE, ASME, NFPA, French and British standards

Consulting

I perform professional consulting for industries in France (Veolia, CEA, ITER), UK (Tokamak Energy), Arab Golf (Qatar, KSA, UAE), Lebanon and Greece. The consulting concern numerical simulations of fire and smoke management in large atria, wind

⁶ NDU = Notre Dame University-Louaize / LIU = Lebanese International University / LTeN = Laboratoire de Thermique et Energétique de Nantes

load simulation on tall buildings, ventilation and thermal comfort, waste heat recovery and heat exchangers design, probes and high thermal systems in tokamaks.

Software and Technical Skills

Numerical Simulation	OpenFOAM C++ ANSYS (Fluent, Structural, Transient Thermal) Matlab Fire Dynamic Simulator (FDS)
Experimental Methods	Particle Image Velocimetry (PIV) Laser Doppler Velocimetry (LDV) Chemical Probe Method Bolometer
CAD and Meshing	AutoCAD SolidWorks Gambit Gmsh SpaceClaim
Energy Modeling	Ecotect eQuest
Data Processing	Paraview Smokeview Origin Lab Tecplot Ansys CFD-Post

Main Collaborators

- University of California Los Angeles (USA): [Dr. Khalid Jawed](#)
- California State University San Marcos (USA): [Dr. Michael Burin](#)
- Paris Diderot University (France) - Western Ontario University (Canada): [Prof. Hassan Peerhossaini](#)
- American University of Beirut (Lebanon): [Prof. Ghassan Antar](#) - [Prof. Marwan Darwish](#) - [Dr. Fouad Azizi](#)
- University of Nicosia (Cyprus): [Dr. Talib Dbouk](#)
- University of Angers (France): [Prof. Thierry Lemenand](#)
- IMT Lille Douai (France): [Prof. Jean-Luc Harion](#), [Prof. Daniel Bougeard](#), [Dr. Serge Russeil](#)
- Commissariat of Atomic Energy (CEA) (France): [Dr. Pascal Devynck](#) - [Dr. Marc Goniche](#)