DR. SHATHA AMMOURAH

Address: Mech. Eng Department
School of Engineering
Philadelphia University
Jordan
Gender: Female
Mobile: +962-(0)-776968086
Email: sammourah@philadelphia.edu.jo
Website: http://www.philadelphia.edu.jo/academics/sammourah/page.php?id=9

PROFILE:

I am an associate professor at Philadelphia University in Jordan. I am a highly motivated individual with twenty years' experience in teaching and running different type of projects. I am expert in using CFD to model and analyze single and multi-phase flows. I am teaching a wide range of courses that are based on thermofluids. I have an excellent knowledge in HVAC engineering modules, besides ASHREA codes.

EDUCATION AND QUALIFICATIONS:

- **Ph.D.** in Mechanical Engineering (Thermofluids), 2005, University of Nottingham, Nottingham, UK. Title of PhD. Thesis " *Numerical and Experimental study of the cerebrospinal fluid dynamics in the human ventricular system* ".
- **M.Phil.** in Mechanical Engineering (Thermofluids), 2001, University of Nottingham, Nottingham, UK.
- **B.Eng.** in Mechanical Engineering, 2000, Jordan University of Science & Technology, Jordan.

KEY EXPERIENCE:

- Eighteen years' experience in teaching Mechanical engineering courses.
- Five years as a head of the mechanical engineering department at Philadelphia university.
- Good experience in thermal comfort and IAQ modeling.
- Excellent experience with both QA and ABET accreditation
- Good experience in CFD modeling.
- Supervising undergraduate projects.
- Reviewing technical papers and undergraduate projects.
- External examiner for Ms and PhD students
- Organizing social events in the University.
- Conference organization.
- Authoring technical reports and academic papers.
- Participating in international competitions.
- Broad experience in the interpretation of experimental data.
- Heat transfer modeling of single and multi-phase flows.
- Thorough knowledge in non intrusive flow visualization techniques; Particle Imaging Velocimetery (PIV) and Particle Tracking Velocimetery (PTV).
- Good experience with different ASHREA codes.

SKILLS:

- Excellent administrative and communication skills.
- Excellent in using moodle and Microsoft teams
- Good lecturing and presentation skills.
- Capability of working closely with the industrial partner.
- International Projects Management and Planning.
- Excellent computer skills.
- Excellent English skills (*Reading, Writing and Speaking*)
- Modeling and understanding **HVAC systems**.
- Utilizing **Renewable Energy Resources**.

CAREER HISTORY:

September 2021-Present **Associate Professor**
Mechanical Engineering Department, Philadelphia University, Jordan.
Key roles during this period:

1. Teaching undergraduate courses in Mechanical Engineering; **Air condition 1, air conditioning 2, refrigeration systems, heat transfer, thermodynamics 1&2, fluid mechanics, thermal power plants, special topics for** mechanical engineering (solar energy and passive buildings)
2. Supervising of undergraduate final year project; like CFD simulation of thermal comfort in buildings, passive buildings, micro-heat exchangers, water harvesting from atmosphere using ammonia refrigeration cycle and etc.
3. Authoring journal publications.
4. Head of the social and graduates following committee in the department
5. Member of scientific research committee in the department
6. Member of placement of qualifications committee in the department
7. Member of the publicity committee in the department
8. Development of labs in the department.

September 2019- 2021: **head of mechanical engineering department, Philadelphia University, Jordan.**
Key roles during this period:

1. Teaching undergraduate courses in Mechanical Engineering.
2. Supervising undergraduate final year projects.
3. Organizing the department modules schedule.
4. Preparing the accreditation files for the department
5. Recruiting staff.
6. Responsible about the QA and ABET work of the department
7. Attending college meetings
8. Authoring journal publications

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September 2012- September 2015: **head of mechanical engineering department, Philadelphia University, Jordan (associate professor)**
Key roles during this period:

9. Teaching undergraduate courses in Mechanical Engineering.
10. Supervising undergraduate final year projects.
11. Organizing the department modules schedule.
12. Preparing the accreditation files for the department
13. Recruiting staff.
14. Responsible about the QA work of the department
15. Attending college meetings
16. Authoring journal publications.

September 2006- January 2012 **Assistant Professor**
Mechanical Engineering Department, Philadelphia University, Jordan.
Key roles during this period:

- Teaching undergraduate courses in Mechanical Engineering.
- Supervising of undergraduate final year projects.
- Authoring journal publications.

April 2005-September 2006: **Research Fellow (PT)**
School of Mechanical, Material and Manufacturing Engineering, University of Nottingham, UK.
Key roles during this period:

- Investigating the complex multi-phase gas/liquid flow and heat transfer in aero-engine bearing components at real engine operating conditions.
- Interpretation of available experimental data.
- Authoring journal and conference papers.
- Writing technical and Industrial reports.
- Running fluid and air conditioning labs for undergraduate students.

August 2005-September 2006: **Research group manager (PT)**
School of Computer science, University of Nottingham, UK
Key roles during this period:

- Managing the financial issues related to MRL group>
- Using an advanced management and accounting software (Agresso)
- Reconciliation.
- Organizing conferences and social events both in UK and abroad.
- Responsible about all managerial issues related to the MRL group.

November 2000- April 2005: **Postgraduate Researcher,**
School of Mechanical, Material and Manufacturing Engineering, University of Nottingham, UK.
Key roles during this period:
-Applying CFD techniques to model the complex flow of cerebrospinal fluid (CSF) within the human ventricular system.
- Using Particle Imaging Velocimetery to map the CSF flow in a representative physical rig of the human ventricular system.
- Drug delivery simulation via CSF in the human brain.
-Interpretation of available experimental data.
-Authoring technical papers.
- Giving professional and conference presentations.
-Running fluid and Solid Mechanics courses and labs for undergraduate students.

AWARDS:

- First prize in fifth national technology parade, 2012, Project "Geothermal heating and air-conditioning simulation in Amman".
- Second place in the engineering association award for graduation projects, 2009, Project" feasibility of utilizing wind energy at Philadelphia University".
- Best mechanical design award in Cyprus Solar car challenge, 2013.
- Second place in Cyprus solar car challenge race, Jun-2014.
- The engineering association award for best renewable project, 2014.
- Third place in mechanical design in students formula race, Northampton, silver stone, UK, August 2014.
- Third place prize in the technoprenurshipe work shop in Malaysia 6\9\2016

RESEARCH INTERESTS:

- Indoor air quality measurements (IAQ), and HVAC systems
- Thermal modeling and design.
- Renewable energy, particularly wind and solar energies
- Micro fluidics and heat exchangers
- Magnetorheological materials thermal behavior.
- CFD
- Passive air-conditioning and ventilation

TEACHING SUBJECTS:

In general, I can teach all subjects related to thermal power modules that can be listed as the following:

- Thermodynamics 1&2
- Air-conditioning 1&2
- Refrigeration systems.
- Thermal systems design
- Power plants
- Fluid mechanics 1&2
- Heat transfer
- Dynamics.

RECENT TAKEN COURSES:

- ASHREA CODES (55, 62.1, 170), 2021
- MOODLE COURSE, 2023

REFERENCES:

Prof. Mamdoh Albousol
Mechanical Engineering Department
Faculity of Engineering
Al Balqa University, Amman applied college
Jordan
Mobile: 0777490654
Email: M_al_bousoul@hotmail.com

Professor Jamal Othman
School of mechanical, Engineering.
Al Balqa University, Amman applied college
Jordan
Mobile: 0799119909
Email: jojaber@gmail.com

PUBLICATIONS

1- Abdullah H. AlEssa1, Ayman M. Maqableh and **S. Ammourah**, 2009, Enhancement of natural convection heat transfer from a fin by rectangular perforations with aspect ratio of two, International Journal of Physical Sciences Vol. 4 (10), pp. 540-547.

2- A. Maqableh, **S. Ammourah** & et.al., Heat Transfer Characteristics of Parallel and Counter Flow Microchannel Heat Exchangers with Varying Wall Resistance, Progress in Computational Fluid Dynamics :An International Journal.

3- M.A. Al-Nimr, A. M. Maqableh, A.F. Khadrawi , **S.A. Ammourah** , 2009, Fully developed thermal behaviors for parallel flow microchannel heat exchanger. *International Communications in Heat and Mass Transfer* **36** pp. 385–390.

4- **Ammourah, S**., Aroussi, A. and Vloeberghs, M., 2005, Cerebrospinal Fluid Mapping Within a Simplified Ventricular System Using PIV. *Proceedings of the 5th Pacific Symposium on Flow Visualisation and Image Processing*, Australia, September.

5- **Ammourah, S**., Aroussi, A. and Vloeberghs, M., 2004, A 2-D simulation of hydrocephalus in the Foramens of Monro of the human ventricular system, *The12th CFD conference,* Ottawa, Canada, May.

6- **Ammourah, S**., Aroussi, A. and Vloeberghs, M., 2004, Hydrodynamics of Cerebrospinal Fluid and Drug delivery in a model of the Human Ventricular system. *ODE Journal.*

7**- Ammourah, S**., Aroussi, A. and Vloeberghs, M., 2003, Cerebrospinal fluid dynamics in a simplified model of the human ventricular system, *The Eleventh annual Conference of CFD 2003,* Vancouver BC, Canada, 28-30 May.

8- **Ammourah, S.**, Aroussi, A. and Vloeberghs, M., 2003, Visualisation of drug delivery to the human brain, *The 7th international symposium on fluid control, measurements and visualisations*, Sorrento, Italy, July.

9- **Ammourah, S**., Aroussi, A. and Vloeberghs, M., 2003, A PIV study of the Cerebrospinal fluid dynamics in a model of the human ventricular system, *The 12th international symposium,* Lisbon, Portugal, July.

10- **S. A. Ammourah**, A.C. Benim, A. M. Maqableh, A.F. Khadrawi & M.A. Al-Nimr. Flow Characteristics of a Micro-Orifice, JP Journal of Heat and Mass Transfer, Vol.7, No. 1, pp. 17 – 34, 2013.

11- M.A. Al-Nimr, A. M. Maqableh, A.F. Khadrawi, **S.A. Ammourah**, 2009, Fully developed thermal behaviors for parallel flow microchannel heat exchanger. *International Communications in Heat and Mass Transfer* **36** pp. 385–390.

12- **S. A. Ammourah**, A. M. Maqableh, A.C. Benim, K. Bataineh and K. Chatterjee. A CFD Simulation of Cerebrospinal Fluid Pulsatile Motion and Drug Delivery in the Human Ventricular System, Australian Journal of Basic and Applied Sciences

13- A.M. Maqableh, **S.A. Ammourah**, A.F. Khadrawi, M.A. Al-Nimr, A.C. Benim. Hydrodynamics Behaviour of Fluid Flow in Micro-Venturi, Canadian Journal of Physics, Vol. **90**, No. 1, pp. 83-89, 2012.

14- A.M. Maqableh, A.F. Khadrawi, M.A. Al-Nimr, **S. Ammourah** & A.C. Benim,"Heat Transfer Characteristics of Parallel and Counter Flow Microchannel Heat Exchangers with Varying Wall Resistance", *Progress in Computational Fluid Dynamics :An International Journal*, Vol. 11, No. 5, pp. 318-328, 2011.

15- M.A. Al-Nimr, A. M. Maqableh, A.F. Khadrawi , **S.A. Ammourah** , "Fully developed thermal behaviors for parallel flow microchannel heat exchanger" *International Communications in Heat and Mass Transfer*, Vol. **36**, No. 4, pp. 385–390, 2009.

16- Ebaid, M.S.Y., **Ammourah, S**., Al Khishali, K.J.M., "Design, build and test a formula student car: An educational engineering exercise at Philadelphia University" *International journal of mechanical Engineering Education, vol **44(1**), pp. 56-93, 2016.*

17- Shreedhar Kolekar, H.S. Panda, **Shatha Ammourah,** T. Jagadesha, ".Magneto rheological fluid: Fabrication and characterization of its temperature-dependent properties" *Materials today proceedings*, Volume **45**, Part 6, Pages 4813-4818, 2021.

18- Rami ALkhalil, **Shatha Ammourah**, Kasim Mousa Alwan AL-Aubidy, "Real-time monitoring and assessment of the Indoor Air Quality hazard using deep learning approach", *I-mangers Journal, vol-**1**, 2023*