

MOUDAR ZGOUL

ASSOCIATE PROFESSOR OF MECHANICAL ENGINEERING



PERSONAL

Place and Date of Birth	Amman, September 6th, 1969
Nationality	Jordanian
Address	PO Box 13270 Amman 11942 Jordan
Email	m.zgoul@ju.edu.jo (work) zgoul.m@gmail.com (personal)
Linkedin	moudarzgoul
Twitter	@mzgoul

EDUCATION

2002	PhD, Mechanical and Aerospace Engineering, Solid Mechanics and Design, Adhesive Technology University of Surrey, United Kingdom PhD thesis: "Characterising the rate dependent response of adhesively bonded structures"
1997	MSc Mechanical Engineering, University of Jordan
1992	BSc Mechanical Engineering, University of Jordan

EMPLOYMENT

Sep 2014 – Sep 2018	Associate Professor of mechanical Engineering American University of Madaba (On Leave from the University of Jordan)
July 2012 –	Associate Professor of mechanical Engineering University of Jordan
Sep 2002 – July 2012	Assistant Professor of mechanical Engineering University of Jordan
Oct 1995 – Sep 1997	Lecturer; Supervisor of the Strength of Materials Lab University of Jordan
Jan 1992 – Sep 1995	Laboratory Engineer University of Jordan

EXPERIENCE

Dec 2015 – Sep2017 Chairman, Mechanical Engineering Department
American University of Madaba

Sep2012-Sep2014 Assistant Dean for Training and Student Affairs.
National Secretary of IAESTE Jordan
(www.iaeste.org)
Faculty of Engineering and Technology – University
of Jordan

Nov2009–Sep2012 Assistant Dean for Student Affairs
Faculty of Engineering and Technology – University
of Jordan

Sep2006-Nov2009 Assistant Dean for Development and IT
Deanship of Academic Research – University of
Jordan

April2006-Sep2007 Laboratories’ Manager
Mechanical Engineering Department – University of
Jordan

Sep2003-Sep2005 Assistant Dean for Computer Affairs
Faculty of Engineering and Technology – University
of Jordan

LANGUAGES

	Beginner	Good	Fluent
Arabic	● ●		
English	● ●		
French	● ●	● ●	
German	● ●	● ●	

RESEARCH INTEREST

- Materials and structures
- Stress analysis and Finite Element Modelling
- Virtual testing of adhesives and polymers
- Constitutive laws and finite element analysis of bonded structures
- Rate dependent response of adhesive materials
- Computational Mechanics, Computer Aided Engineering and Implementation of Neural Networks for material modelling
- Artificial Intelligence and Neural Networks
- Fluidic/Artificial Muscles and Robotic Applications

TAUGHT COURSES

Undergraduate courses: Engineering Graphics , Strength of Material , Machine Design I and II, Design of Machine Elements, Technical Writing, Computer Applications.

Laboratories: Strength of Materials Lab, Materials Lab, Mechanical Vibrations Lab, Engineering measurements lab.

Graduate courses: Research methodology, Theory of plates and shells, Theory of elasticity, Finite element method, Advanced measurements.

PROJECTS AND DISSERTATIONS

- ◉ Bendy sign posts and street lights for better safety (Crash simulation using Finite Element Method).
- ◉ Crash simulation of an off-road vehicle.
- ◉ Design of a Smart Walker for the Elderly.
- ◉ Thermo-pipes materials behaviour and aging effect (plastic pipes used for heating).
- ◉ Development of a Brake-By-Wire system.
- ◉ Mechanical arm using Fluidic muscles.
- ◉ A pneumatic vehicle using fluidic muscles.
- ◉ Design, Analysis and Manufacturing of Spring Loaded Bionic Boots.
- ◉ Fatigue analysis of Alloy Wheels.
- ◉ Piezoelectric Micro-Generator.
- ◉ Wind turbines failure analysis.
- ◉ Smart Fire Fighting Systems.
- ◉ Smart Hazards Detector
- ◉ Autonomous Tracking Vehicle
- ◉ Design of a Smart Wheelchair
- ◉ Feasibility Study of a Small Scale Vertical Axis Wind Turbine in Amman
- ◉ Design and characterization of miniaturized fluid motors for electric power generation (MSc)
- ◉ Modelling Hysteresis Nonlinearities in Pneumatic Artificial Muscles (MSc)
- ◉ Development of a new destination elevator group control algorithm (MSc)
- ◉ Simulation of Hybrid Adhesives: A study on Mechanical Properties (Msc)

RESEARCH GRANTS

- ◉ Deutsche Forschungsgemeinschaft (DFG) fellowship: Technical University of Braunschweig-Institute für Füge- und Schweißtechnik, Germany, June/2008-September/2008. Worked on generating experimental data on rate dependent adhesive materials for the purpose of creating a material model that can be integrated within the finite element code.
- ◉ Deutsche Forschungsgemeinschaft (DFG) fellowship: Technical University of Braunschweig-Institute für Füge- und Schweißtechnik, Germany, June/2009-September/2009. Worked on simulating bonded joints using the finite element method and on developing a technique for testing adhesive materials using x-ray diffraction methods.

PROFESSIONAL TRAINING AND ACTIVITIES

- ◉ Training of Trainers workshop (April 2004) – Amman.
- ◉ Training Trainers for TEMPUS and other programs (equivalent to 2 ECTS), Tempus-Meda project SCM M007A04 (July 2005) – Amman.
- ◉ Quality infrastructure-accreditation and conformity assessment bodies-concepts and requirements -ISO17025 (Dec 2004) – Amman.
- ◉ European Product safety Legislation/The New Approach Directives-Toy Directives (April 2006) – Amman.
- ◉ G.U.N.T. Laboratory training on Strength of Materials equipment (May 2006) – Amman.
- ◉ Refresher training: Technical Policies of Accreditation and Assessment reports (June 2006) – Amman.
- ◉ Youth invitation program – ICT in Education (Feb - Mar 2005) – Japan.
- ◉ Creative thinking skills, Egypt (April 2006).

- ◉ Summer School in Mechatronics and Microsystems “Mecmico6”, Germany (August 2006).
- ◉ Technical Aspects in Accreditation: Proficiency Testing schemes in the Mechanical Field (July 2007)-Amman.
- ◉ Refresher Course – Accreditation Unit – Jordan Accreditation System – (July 2007)-Amman.
- ◉ ‘Faculty-For-Factory’ program of collaboration between the University of Jordan and Jordanian industries: worked on developing technical data sheets for locally produced adhesive materials.
- ◉ Leadership in Higher Education (October 2008) – Amman.
- ◉ FP7 week, May 2010 (FP7 proposal writing, partenring, evaluation, and contract negotiation).
- ◉ Producing Multimedia for E-learning (October 2010)- Amman.
- ◉ Web-Based, multi-media and interactive education (self-development work).
- ◉ Refresher training session – Accreditation Unit – Jordanian Accreditation System (JAS). July 2012 – Amman

MEMBERSHIP

- ◉ Technical committee for accreditation-Mechanical Engineering, Material Science and Proficiency tests- Jordan Accreditation System (JAS).
- ◉ Technical committee for pressure vessels and pressure equipment, Jordan Standards and Metrology Organization (JSMO)
- ◉ Technical team for ISO17025 audits/ Technical Assessor-Jordan Accreditation System (JAS)

AFFILIATION

- ◉ Royal Institute of Materials, UK
- ◉ Society for adhesives and adhesion, UK
- ◉ The Welding Institute (World Centre for Materials Joining Technology), UK
- ◉ Advisory committee, International Energy Foundation, UK
- ◉ Jordan Engineers Association

PUBLICATIONS

1. Zurigat, Y.H., Hammad, M.A., **Zgoul, M.H.**, Jaber, L.T. and Al-Nsour, S.R., “*The Potential Use of Evacuated-Tube Solar Collector for Absorption Refrigeration Systems*”, Proceedings of the Second International Conference on Refrigeration and Air-Conditioning, April 18-20, Amman-Jordan, pp. 141-153, 1992.
2. A.D. Crocombe and **M. Zgoul**, “*Characterising the rate dependent response of adhesively bonded joint*”, 5th European Adhesion Conference, EURADH 2000, Lyon, France, 2000.
3. Crocombe A. D. and **Zgoul M**, “*Predicting the strength of bonded joints tested at different rates*”, 25th Annual Meeting of the Adhesion Society, Inc. and The 2nd World Congress on Adhesion and Related Phenomena (WCARP-II), Orlando, Fl, Feb. 12, 2002.
4. **M. Zgoul** and A.D. Crocombe, “*Numerical modelling of lap joints bonded with a rate-dependent adhesive*” International Journal of Adhesion and Adhesives, Volume 24, Issue 4, August 2004, Pages 355-366.
5. A. Abu Ghanimeh, S. Abu-Ghazalah, **M. Zgoul** and W. Al-Azhari, “*The use of computers in architectural research and practice in Jordan*”, 4th FAE International Symposium, Lefke, Cyprus, 2006.
6. **M. Zgoul**, “*Virtual Testing of Adhesive Materials*”, The 3rd World Congress on Adhesion and Related Phenomena, WCARP-III, 15~18

- Oct., 2006, Beijing, PR China.
7. M.S. Shawaqfah, R.A. Damseh, A.J. Chamkha, H.M. Duwairi, **M.H. Zgoul**, "Forced Convection of Blasius Flow of "Second-Grade" Visco-Elastic Fluid", International Journal of Heat Technology, Volume 25, No. 1, June 2007, pp. 145-150.
 8. **Moudar Zgoul** and Saad Habali, "Bendy Signposts and Street Lights for Better Safety", 12th Conference for Computer Aided Engineering and System Modeling", 2007, Turkey.
 9. **M. H. Zgoul** and S. Habali, "An investigation into Plastic Pipes as Hot Water Transporters in Domestic and Industrial Applications", Jordan Journal of Mechanical and Industrial Engineering, Volume 2, No. 4, December 2008, pp 191-200.
 10. **M. H. Zgoul** and M. I. Kilani, "Development of a multimedia toolkit for Engineering Graphics Education", iJET – Volume 4, Issue 3, September 2009.
 11. A. Al-Salaymeh, **M. Zgoul**, H. Khalidi and S. Habali, "Wind-Energy Augmentation Using the Delta-Wing Vortex", Dirasat, University of Jordan, Volume 37, Engineering Sciences, Number 1. April 2010, pp. 13-26.
 12. **Moudar H. Zgoul**, "Predicting the mechanical behavior of steel frames exposed to elevated temperatures using artificial neural networks", WSEAS TRANSACTIONS on SYSTEMS, Volume 9, issue 8, August 2010, pp. 895-904.
 13. **M.H. Zgoul** and M. Abu-Zurayk, "A CRASH SIMULATION OF AN OFF-ROAD VEHICLE", International Conference on Applied Mechanics, Materials and Manufacturing, ICAMMM 2010, Sultan Qaboos University, 13-15 December, Oman.
 14. **M. Zgoul**, B. Ziadeh, R. Al-Dirini and O. Abdeen, "DEVELOPMENT OF A BRAKE-BY-WIRE SYSTEM", 5th International Conference on Advances in Mechanical Engineering and Mechanics ICAMEM2010, 18-20 December 2010, Hammamet, Tunisia.
 15. **Moudar Zgoul** and Idriss El-Thalji, "Wind Energy Operation and Maintenance Practices in Desert Climate: threats, challenges and solutions" Global Conference on Renewables and Energy Efficiency for Desert Regions, GCREEDER 2011, Amman-Jordan, April 26th – 28th 2011.
 16. **Moudar Zgoul**, "Modelling Rate Dependent Behaviour in Adhesively Bonded Joints Using Artificial Neural Networks" Eleventh International Conference on the Science and Technology of Adhesion and Adhesives, National Science Learning Centre, University of York, UK, 7 - 9 September 2011.
 17. **M.H. Zgoul**, A. Alzamer, M. R. Elayyan and M. A. Quran, "Static Analysis of a Tensegrity Bridge using the Finite Element Method", International Conference on Applications and Design in Mechanical Engineering (ICADME 2012), Malaysia, 27-28, February 2012.
 18. **Moudar H. Zgoul**, "Use of Artificial Neural Networks for Modelling Rate Dependent Behaviour of Adhesive Materials", International Journal of Adhesion and Adhesives, Volume 36, July 2012, Pages 1-7.
 19. **Moudar Hamed Zgoul**, Hashem Saleem Alkhalidi, Saad Mohammad Habali, Mu'tasim Soud Abdel-jaber and Bassam Mohammed Ziadeh, "Failure Investigation of Reinforced Concrete Columns Exposed to Fire", Dirasat, volume 39, No. 1, 2013.
 20. A.T. Al-Halhouli, M. Abu Rumman, **M. Zgoul**, "Design and Testing of a Meso-Scale Pneumatic Actuated Electrical Power Generator" Int. J. of Thermal & Environmental Engineering Volume 10, No. 1 (2015) 63-

67.

21. **Moudar H. Zgoul**, "Computational Aerodynamics Optimization of Wind Turbine's Blade Twist Angle", World Congress and Exhibition on Wind & Renewable Energy, Berlin, Germany, July 28-30, 2016
22. Malak Al-Ma'aita, **Moudar Zgoul**, Mohammad Al Janaideh, "Hysteresis Nonlinearities in Pneumatic artificial Muscles", Proc. of the Fourth International Conference on Advances in Mechanical and Robotics Engineering - AMRE 2016, 15-16 December 2016, Rome, Italy
23. **M.Zgoul**, J. Yamin and Y. Yousef, "Analysis of Mechanical and Thermal Stresses on Connecting Rod/Piston of a Variable Compression Ratio Engine Powered by Biodiesel", International Journal of Mechanical And Production Engineering, ISSN: 2320-2092, Volume- 5, Issue-8, Aug.-2017.
24. **Moudar H. A. Zgoul**, Amin Al Zamer, "Evaluation of the Elastic Mechanical Properties of a Hybrid Adhesive Material" World Academy of Science, Engineering and Technology International Journal of Mechanical and Materials Engineering, Vol:11, No:12, 2017