

1. Name

Aliaa M. Abou-Ali

2. Academic Rank

Assistant Professor of Systems Engineering, College of Engineering and Applied Sciences (CEAS), American University of Kuwait (AUK)

3. Degrees

- **PhD** in Interdisciplinary Engineering, Khalifa University - former Masdar Institute that had an affiliation (MOU) with Massachusetts Institute of Technology, Abu Dhabi, United Arab Emirates. Dissertation title “Experimental and Finite Element Analyses of Mechanical Behavior for Polymeric Triply Periodic Minimal Cellular Solids Fabricated by Additive Manufacturing”, Dec. 2018, GPA 3.75.
- **M.Sc.** in Production Engineering, Alexandria University, Egypt. Thesis title “An Optimization Model for Inventory Replenishment and Shelf Space Management in Retail Supply Chains”, Jan. 2011, GPA 3.56.
- **B.Sc.** Distinction with Honour, First Class Merit, Production Engineering Department, Faculty of Engineering, Alexandria University, Egypt, June 2007, GPA 3.45.

4. Service at this Institution

September 2022 - June 2023:	Adjunct Assistant Professor, CEAS, AUK
September 2023 - June 2025:	Visiting Assistant Professor, CEAS, AUK
July 2025 - Present:	Assistant Professor, CEAS, AUK

5. Professional Experience

July 2025 – Present: Assistant Professor of Systems Engineering, College of Engineering and Applied Sciences (CEAS), American University of Kuwait (AUK), Kuwait.

Sept 2023 – June 2025: Visiting Assistant Professor of Systems Engineering, College of Engineering and Applied Sciences (CEAS), American University of Kuwait (AUK), Kuwait.

Sept 2022 – June 2023: Adjunct Assistant Professor of Systems Engineering, College of Engineering and Applied Sciences (CEAS), American University of Kuwait (AUK), Kuwait.

Sept 2021 – present: Assistant Professor, Manufacturing Engineering Division, Production Engineering Department, Faculty of Engineering, Alexandria University, Alexandria, Egypt. (on-leave since January 2022)

Nov 2019 – July 2021: Post-Doctoral Fellow, Advanced Digital & Additive Manufacturing (ADAM) Centre, Department of Aerospace Engineering, Khalifa University, Abu Dhabi, UAE.

April 2019 – Oct 2019: Visiting Researcher at Khalifa University, Mechanical Engineering Department, Abu Dhabi, UAE.

Jan 2014 – Dec 2018: Research Assistant/PhD candidate at Khalifa University, Abu Dhabi, UAE.

Sept 2014 – May 2017: Teaching Assistant, Engineering Systems and Management Department, Khalifa University, Abu Dhabi, UAE.

Jul 2011 – July 2021: Assistant Lecturer/Research Assistant Industrial Engineering division, Production Engineering Department, Faculty of Engineering, Alexandria University (on leave), Alexandria, Egypt.

Feb 2011 – Jun 2011: Assistant Lecturer/Research Assistant, Production Engineering Department, Faculty of Engineering, Alexandria University, Egypt.

Sep 2007 – Feb 2011: Teaching Assistant/Research Assistant, Production Engineering Department, Faculty of Engineering, Alexandria University, Egypt.

6. Consulting Experience

N/A

7. Professional Registration (State(s) in which registered.)

Egyptian Syndicate of Engineers, Egypt (since 2007).

8. Publications Principal publication of last five years (give titles and references)

a) Refereed Journals.

Abou-Ali, A. M., Ejeh, C. J., Cantwell, W. J., Barsoum, I., Bojanampati, S., & Abu Al-Rub, R. K. (2025). Impact-Damage Behavior of Additively Manufactured Stainless Steel Triply Periodic Minimal Surface-Lattice Composite Sandwich Panels. *ES Materials & Manufacturing*, 28, 1461. <https://doi.org/10.30919/mm1461>

Ejeh, C. J., Barsoum, I., **Abou-Ali, A. M.**, & Al-Rub, R. K. A. (2023). Combining multiple lattice-topology functional grading strategies for enhancing the dynamic compressive behaviour TPMS-based metamaterials. *Journal of Materials Research and Technology*. <https://doi.org/10.1016/j.jmrt.2023.10.247>

Abou-Ali, A. M., Lee, D. W., & Abu Al-Rub, R. K. (2022). On the Effect of Lattice Topology on Mechanical Properties of SLS Additively Manufactured Sheet-, Ligament-, and Strut-Based Polymeric Metamaterials. *Polymers* 2022, 14(21), 4583. <https://doi.org/10.3390/polym14214583>

Abou-Ali, A. M., Al-Ketan, O., Lee, D. W., Rowshan, R., & Abu Al-Rub, R. K. (2020). Mechanical behavior of polymeric selective laser sintered ligament and sheet based lattices of triply periodic minimal surface architectures. *Materials & Design*, 196, 109100. <https://doi.org/10.1016/j.matdes.2020.109100>

Abou-Ali, A. M., Al-Ketan, O., Rowshan, R., & Abu Al-Rub, R. K. (2019). Mechanical Response of 3D Printed Bending-dominated Ligament-based Triply Periodic Cellular Polymeric Solids. *Journal of Materials Engineering and Performance*, 28, 2668–2679. <https://doi.org/10.1007/s11665-019-03982-8>

b) Conferences

Alawadhi, R., Almousawi, M., Burhama, F., Albeshar, F., Nour, A., & **Abou-Ali, A. M.**, “AI-Based Home Automation System,” poster/demo presentation at the 17th Student Research Conference on Applied Computing (SRC2026), College of Technological Innovation, Zayed University, UAE, April 2026.

Reda, A. A., **Abou-Ali, A. M.**, & Gharaibeh, B. M. Y., “From SWOT Insights to Generative Design: Advanced Additive Manufacturing of Oil and Gas Spare Parts,” scientific poster presented at the 5th Scientific Research Conference “Fostering Academic Excellence Through Interdisciplinary Research and Innovation,” Kuwait University, Kuwait, February 2026.

Altamimi, S., **Abou-Ali, A. M.**, Al-Ketan, O., Lee, D.W, Abu Al-Rub, R.K., “Finite Element Analysis of Mechanical Behavior of Graphene-Reinforced Gyroidal Cellular Polymer Nanocomposites,” 5th International Conference on Mechanics of Composites, Lisbon, Portugal, 2019.

Altamimi, S., **Abou-Ali, A. M.**, Al-Ketan, O., Lee, D.W, Abu Al-Rub, R.K., “Mechanical Behavior of 3D Printed Graphene-Reinforced Gyroidal Cellular Nanocomposites,” ICCE-27, 27th Annual International Conference on Composite and Nano Engineering, Granada, Spain, 2019.

Altamimi, S., **Abou-Ali, A. M.**, Al-Ketan, O., Lee, D.W, Abu Al-Rub, R.K., “Experimental and Numerical Analysis of Mechanical Behavior of 3D Printed Graphene-Reinforced Gyroidal Cellular Nanocomposites,” UAEGSRC19, The Graduate Students Research Conference (GSRC), Zayed University, Abu Dhabi, UAE, 2019.

Abou-Ali, A. M., Al-Ketan, O., Rowshan, R., Abu Al-Rub, R.K., “Mechanical Behavior of 3D Printed Skeletal Gyroid Cellular Structures,” ICCE-25, 25th Annual International Conference on Composites and Nano Engineering, Rome, Italy, 2017.

Abou-Ali, A. M., Al-Ketan, O., Rowshan, R., Abu Al-Rub, R.K., “Mechanical Properties of Skeletal Gyroid Cellular Solids using 3D Printing,” UAEGSRC17, The Graduate Students Research Conference (GSRC), 2017.

c) Books

Gharaibeh, B. M. Y., & **Abou-Ali, A. M.** “Development and Evolution of the Simplex Method in Linear Programming.” In *Encyclopedia of Engineering Optimization and Heuristics*, edited by Anand J. Kulkarni, Efren Mezura-Montes, and Hossein Bonakdari. Springer, submitted/in production.

9. Membership in Professional Societies

- Egyptian Syndicate of Engineers, Egypt.
- American Society for Quality (ASQ).

10. Patents, Honors, and awards

- Received an AUK Research Initiation Grant for the project titled “Development of an AI-Assisted Digital PCB Fabrication Workflow for Undergraduate Laboratories” as Principal Investigator, 2026.
- Received an AUK Research Grant for the project titled “Experimental Evaluation of PEM-Based Hydrogen Injection for Improving Combustion Efficiency and Emissions in Internal Combustion Engines” as Co-Principal Investigator, 2026.
- Received a Young Researcher Grant from the Kuwait Foundation for the Advancement of Sciences (KFAS) for the project titled “Advancing Oil Industry Efficiency: Polymer-Based Spare Parts through 3D Printing and AI-Enhanced Design (AOIE)” as Principal Investigator, 2024.
- Supervised a senior capstone project titled “Enhancing Efficiency in the Oil and Healthcare Industries,” which was awarded Second Place in the Fall 2024 Capstone Exhibition at the American University of Kuwait (AUK).
- ASQ Certified Six Sigma Green Belt (CSSGB), American Society for Quality (ASQ), 2025.
- Received a Certificate of Appreciation from the Office of Research & Grants at the American University of Kuwait for academic publication contributions during the 2023–2024 academic year, June 2025.
- Certificate of Appreciation as Mentor and Judge, NASA International Space Apps Challenge, 2025.
- Certificate of Participation as Organizer, Kuwait Collegiate Programming Contest (KCPC), 2025.
- Best student in the Production Engineering Department, Alexandria University, 2007.
- Alexandria University Distinction Award for four consecutive academic years (2003/2004 – 2006/2007).

11. Courses taught.

a) Academic Courses

Summer 2026 (AUK)

- ENGR 340: Engineering Project Management (3 Hrs/week, 1 section)
- ENGR 340L: Engineering Project Management Lab (1 Hr/week, 1 section)
- STEG 330: Operations Research I (3 Hrs/week, 1 section)
- GENE 104: Scientific Inquiry (3 Hrs/week, 1 section)

Spring 2026 (AUK)

- ENGR 210: Engineering Entrepreneurship I (3 Hrs/week, 2 sections)
- STEG 341: Production and Operations Management (3 Hrs/week, 1 section)
- STEG 331: Operations Research II (3 Hrs/week, 1 section)
- GENE 104: Scientific Inquiry (3 Hrs, 1 section)

- ENGR 340: Engineering Project Management (Independent Study)

Fall 2025 (AUK)

- STEG 330: Operations Research I (3 Hrs/week, 1 section)
- STEG 442: Supply Chain Engineering (3 Hrs/week, 1 section)
- STEG 460: Engineering Reliability (3 Hrs/week, 1 section)
- GENE 104: Scientific Inquiry (3 Hrs, 2 sections)
- STEG 331: Operations Research II (Independent Study)
- STEG 341: Production and Operations Management (Independent Study)

Spring 2025 (AUK)

- ENGR 340: Engineering Project Management (3 Hrs/week, 1 section)
- STEG 341: Production and Operations Management (3 Hrs/week, 1 section)
- STEG 420: Facilities Planning & Design (3 Hrs/week, 1 section)
- STEG 330: Operations Research I (3 Hrs/week, 1 section)
- GENE 104: Scientific Inquiry (3 Hrs, 1 section)
- STEG 331: Operations Research II (Independent Study)

Fall 2024 (AUK)

- STEG 330: Operations Research I (3 Hrs/week, 1 section)
- STEG 331: Operations Research II (3 Hrs/week, 1 section)
- STEG 442: Supply Chain Engineering (3 Hrs/week, 1 section)
- GENE 104: Scientific Inquiry (3 Hrs, 1 section)
- ENGR 210: Engineering Entrepreneurship I (3 Hrs/week, 1 section)
- ENGR 340L: Engineering Project Management Lab (Independent Study)

Spring 2024 (AUK)

- ENGR 210: Engineering Entrepreneurship I (3 Hrs/week, 2 sections)
- STEG 340: Engineering Project Management (3 Hrs/week, 1 section)
- STEG 340L: Engineering Project Management Lab (1 Hr/week, 1 section)
- STEG 341: Production and Operations Management (3 Hrs/week, 1 section)
- STEG 330: Operations Research I (3 Hrs/week, 1 section)
- STEG 331: Operations Research II (Independent Study)

Fall 2023 (AUK)

- ENGR 210: Engineering Entrepreneurship I (3 Hrs/week, 1 section)
- STEG 330: Operations Research I (3 Hrs/week, 1 section)
- STEG 331: Operations Research II (3 Hrs/week, 1 section)

Spring 2023 (AUK)

- STEG 340: Engineering Project Management (3 Hrs/week, 1 section)
- STEG 340L: Engineering Project Management Lab (1 Hr/week, 1 section)
- STEG 442: Supply Chain Engineering (3 Hrs/week, 1 section)

Fall 2022 (AUK)

- STEG 341: Production and Operations Management (3 Hrs/week, 1 section)

Fall 2021 (Alexandria University)

- PED 011: Principles of Manufacturing Engineering (3 Hrs/week, 3 sections)
- PED 221: Theory of Metal Cutting (3 Hrs/week, 1 section)
- PED 431: Advanced Manufacturing Technologies (3 Hrs/week, 1 section)

Sept 2014 – May 2017 (Khalifa University) - Post graduate students

- Production Planning and Inventory Management Lab (1 Hr/week, 1 section)
- Environmental Sampling and Data Analysis (1 Hr/week, 1 section)
- Analysis of Complex Networks (1 Hr/week, 1 section)

Sept 2007 – May 2011 (Alexandria University)

- Production Planning and Inventory Management Lab (1 Hr/week, 4 sections)
- Engineering Economy Lab (1 Hr/week, 4 sections)
- Project Management Lab (1 Hr/week, 4 sections)
- Management Information Systems Lab (1 Hr/week, 4 sections)
- Operations Research Lab (1 Hr/week, 4 sections)
- Facilities Planning and Design Lab (1 Hr/week, 4 sections)
- Ergonomics Lab (1 Hr/week, 4 sections)
- Industrial Safety Lab (1 Hr/week, 4 sections)
- Simulation Lab (1 Hr/week, 4 sections)
- Knowledge Engineering Lab (1 Hr/week, 4 sections)
- Engineering Design Lab (1 Hr/week, 4 sections)
- Expert Systems Lab (1 Hr/week, 4 sections)

b) Intensive professional short courses

June 2026: Trainer, Lean Six Sigma Green Belt Program, Center for Continuing Education (CCE), American University of Kuwait (AUK), delivered to Kuwait Finance House (KFH) participants.

August 2026: Trainer, Lean Six Sigma Green Belt Program, Center for Continuing Education (CCE), American University of Kuwait (AUK), delivered to professionals from various industries, including the National Bank of Kuwait (NBK).

c) Community Service courses

N/A

12. Other Duties**a) Department**

- Participated in planning meetings for the Systems, Applications, and Products in Data Processing (SAP) Dual Study Program, representing the Systems Engineering program alongside Dr. Belal Gharaibeh.
- Co-conducted a workshop on Business Model Ontology (BMO) for Systems Engineering students at the American University of Kuwait (AUK) in collaboration with the Institute for Systemic Economic Engineering (ISEE), Sofia, Bulgaria, May 2024.
- Co-organized the “Meet the Systems Engineering Community” event for Systems Engineering students at AUK alongside Dr. Belal Gharaibeh, December 2024.

b) College level

Sept. 2023 – Present: Member in the Research Management and Planning Committee (RMPC)

Feb. 2025 – May 2025: Supervised a Student Research Assistant through the Office of Research & Grants (AUK), contributing to ongoing research in mechanical characterization of polymer materials.

c) Institution level

- Served as one of the main organizers of the Kuwait Collegiate Programming Contest (KCPC), part of the International Collegiate Programming Contest (ICPC), hosted at the American University of Kuwait (AUK), 2025. Responsibilities included overseeing event coordination and supporting the successful execution of the competition with participating university teams from across Kuwait.
- Served as a Mentor and Judge in the NASA International Space Apps Challenge hosted at the American University of Kuwait (AUK), 2025. Contributed to mentoring participating teams, evaluating innovative project submissions, and supporting interdisciplinary collaboration in developing data-driven and technology-based solutions addressing real-world and space-related challenges.

d) Outside the institution

Sept. 2024 – June 2025: Scientific Committee Member, 4th International Conference on 3D Printing & Additive Manufacturing, 2025.

Nov. 2019 – July 2021: Member in the Advanced Digital & Additive Manufacturing (ADAM) Centre

13. Research

a) Research Grants

June 2026 – Present: Principal Investigator, AUK Research Initiation Grant, *“Development of an AI-Assisted Digital PCB Fabrication Workflow for Undergraduate Laboratories.”* The project develops and validates an AI-assisted

workflow integrating CAD automation and CNC manufacturing for PCB fabrication in undergraduate engineering laboratories.

June 2026 – Present: Co-Principal Investigator, AUK Research Grant, “*Experimental Evaluation of PEM-Based Hydrogen Injection for Improving Combustion Efficiency and Emissions in Internal Combustion Engines.*” The project investigates PEM-based hydrogen injection to improve combustion efficiency and reduce emissions in internal combustion engines.

January 2024 – June 2026: Principal Investigator, KFAS Young Researcher Grant (AOIE), “*Advancing Oil Industry Efficiency: Polymer-Based Spare Parts through 3D Printing and AI-Enhanced Design.*” The project was successfully completed, with all deliverables achieved and the final technical report submitted to KFAS.

b) Research groups

- Member in “Advanced Manufacturing & Systems Innovation” (AMSI) research group, with research activities focused on additive manufacturing, 3D printing applications, and systems innovation.
- Member in the “Nanotechnology Research Team” (NRT), an interdisciplinary research group under the Research and International Publishing Administration (RIPA), Pharos University in Alexandria, contributing to research on advanced materials and polymer applications.

14. Participation in Specific Programs

June 2025: ASQ Six Sigma Green Belt Certification Course, Center for Continuing Education (CCE), American University of Kuwait (AUK), 35 hours.

Feb. 2025: Collaborative Institutional Training Initiative (CITI) Certification – Biomedical (Biomed) Comprehensive (Stage 1).

Nov 2024: Completed a 3-day intensive online training program on the Upskilling International Publication (UIP) for university faculty members, encompassing three levels designed to enhance publication skills and research impact.

Level 1: Concepts & Fundamentals of International Scientific Publishing

Level 2: Proper Steps in the Pathway of Scientific publishing based on International Criteria

Level 3: Tips & Tricks for promoting ranking metrics for authors and university

Jan 2020: Training on fabrication and processing of composite sandwich panels using woven carbon fiber-reinforced polymer (CFRP) skins, bonding techniques, and hot press manufacturing integrated with additively manufactured lattice structures, Khalifa University, UAE.

Dec 2019: Design Optimization workshop Using Tosca/Abaqus, Khalifa University, UAE.

- Optimization for Structure with non-linearity
- Introduction to FE-safe

- Automating Analysis in FE-safe
- Fatigue of welds in FE-safe
- Introduction to Tosca structure
- Introduction to Tosca Fluid

April - July 2019: Teaching workshops at Faculty and Leadership Development Centre (FLDC) Alexandria University, Egypt.

- Research Ethics and Plagiarism (12 hours).
- Quality Standards in Teaching (12 hours).
- Exams and Students Evaluation Systems (12 hours).
- Competitive Research Projects Proposals (12 hours).
- Rights and Duties of University Staff Assistants (12 hours).
- Global Databases Usage (12 hours).

Feb 2017: 3D Printing training on Stratasys PolyJet Technology (20 Hrs), Khalifa University, UAE, including training on PolyJet, Stereolithography (SLA), and Fused Deposition Modeling (FDM) additive manufacturing technologies.

Aug 2016: Electron Microscopy and micro-Computed Tomography (micro-CT) training for material characterization techniques (20 Hrs), Khalifa University, UAE.

Feb 2016: Training on Finite Element Analysis (FEA) and numerical simulation using Abaqus software, Khalifa University, UAE.

Jan 2016: Training on mechanical testing and characterization techniques for advanced materials, including tensile and compression testing, Khalifa University, UAE.