

# Al-Mehdi Mohamed Ibrahim *PhD, EIT*

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## Summary

Dr. Al-Mehdi Ibrahim has been working in academia and industry for the last 13 years. He has over 2 years of experience working in Process Engineering in the Healthcare at the Cancer Care Manitoba, where he had to interview doctors, nurses, and managers to analyze their working procedures and hence develops new methods that improve the healthcare systems' performance. Al-Mehdi attained his PhD in the area of Production Planning and Scheduling from Department of Mechanical Engineering at the University of Manitoba in October 2015. He received his M.Sc. degree in Engineering management from University of Tripoli, Libya in 2003 and his B.Sc. in Material Science and Engineering from the University of Tripoli, Libya in 1991. His research interests focus on Scheduling Optimization, Cellular Manufacturing System, and Quality Engineering. Al-Mehdi has over 6 years of ex-

perience as an Engineer, where he primarily worked on Material Engineering and Quality control testing. Al-Mehdi is a member of Association of Professional Engineers and Geoscientists in Manitoba (APEGM) as an Engineer in Training (EIT). He has over 8 years of experience teaching in Engineering Materials and Engineering Management. Al-Mehdi has published several papers in reputable journals. Dr. Ibrahim is working as a member of the committee of the ranking of Libyan universities since Sep. 2020. Dr. Ibrahim has been very active in community services, He has worked as a member of Technology Transfer offices (TTOs) team in Libyan universities. He had been selected as University of Gharyan representative at the European Union Program on Entrepreneurship Degree Integrating within Libyan Higher Education.

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## Education

University of Manitoba PhD (Industrial Engineering and Manufacturing Systems)	Winnipeg, Canada 2009 – 2015
University of Tripoli Masters ( Industrial Engineering (Quality Management)	Tripoli, Libya 2001 – 2003
University of Tripoli Bachelors (Materials Science and Engineering)	Tripoli, Libya 1985 – 1991

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## Academic Appointments

Alfaisal University - Riyadh Senior lecturer	Riyadh, KSA August '23 – Current
Responsibilities included teaching undergraduate courses, and supervising Capstone projects. <b>Taught courses:</b> 1- Production Information System 2- Quality Engineering 3- Work system analysis and design	
Libyan Academy for Postgraduate studies - Gharyan Adjunct Professor	Gharyan, Libya Feb '22 – May '23
Responsibilities included teaching graduate courses, and supervising Master thesis. <b>Taught courses:</b> 1- Research Methods 2- Advanced Quality Engineering	
Faculty of Engineering, University of Gharyan Assistant Professor	Gharyan, Libya Sep. '16 - May '23
Responsibilities included delivering lectures, preparing course materials for Industrial Engineering courses, and supervising students projects. <b>Taught Courses:</b> <ul style="list-style-type: none"><li>• Engineering Management</li><li>• Quality control</li><li>• Introduction to Entrepreneurship</li><li>• Industrial Systems Simulation</li></ul>	

- Design of Industrial Experiments
- Introduction to Work Study

#### **Supervised Senior Projects:**

Responsibilities included supervising the projects for senior student to attain the required research skills in terms of conducting experiments and collecting data, writing and presenting the projects.

- Developing a simple model to improve quality of a healthcare system using *Flexsim* simulation software.
- Role of Quality Education For Sustainable Development Goals (SDGS) in the Context of 2030 Agenda
- Using the Robust design Technique based on Taguchi methods to evaluate the quality of engineering education system.
- Developing a Metaheuristic Algorithm to solve a simple scheduling problem.

#### **Academic service and Committees:**

- **Quality Manager:**  
Director of the University of Gharyan website  
Responsibilities included the supervision of the academic content and the research activities (conferences, academic programs, workshops) that posted in the website
- **Accreditation committee:**  
I worked as a member of the National committee of Libyan university ranking and classifications in Dec. 2020. Responsibilities included the assessed of 27 universities across the country to ensure educational quality and accreditation requirements are met. The assessment is contacted based on several educational standards such as: education and learning, academic contributions, e-learning, and community service and environment.
- **Chairman of the scientific committee of the first conference on Entrepreneurship, University of Gharyan, Nov.10-11, 2021,**
- **A member of scientific committees The International Mediterranean Conference Sep. 2021 Tunis.**
- **Editor:** Responsibilities included the editing and reviewing of manuscripts in the following conferences and journals:
  - The Third International Conference on the output of Higher Education and its relationship to Employment Policy, at the University of Akli Mohnad Oulhadj, Bouira, Algeria (8-9 June 2021).
  - The First International Maghreb Conference on Developments in Sustainable Development ‘Reality and Hope’ Feb. 2021 Tunis.
  - Third International Conference on Mechanical, Electric and Industrial Engineering (MEIE2020), in Kunming, China during May 23-25, 2020  
Paper title: Multi-objective flexible job shop scheduling problem with triple bottom line theory-based sustainable objectives
  - International Journal of Engineering and Technology, July 2018.  
Paper title: Investigating thermal structural changes in soft tissue using longitudinal ultrasonic velocity and attenuation coefficient.

Faculty of Engineering, University of Manitoba

Winnipeg, Canada

#### **Research Assistant (Process Engineer)**

Sep '12 – Dec '14

Responsibilities included conducting several projects on process engineering at the CancerCare, Manitoba. The main objective is to implement industrial methods and techniques to highlight areas need improvement such as machine utilization, scheduling optimization

Faculty of Engineering, University of Manitoba

Winnipeg, Canada

#### **Teaching Assistant**

Jan '10 – Apr '15

Responsibilities included conducting and grading labs, grading assignments and delivering occasional lectures.

University of Gharyan

Gharyan, Libya

#### **Instructor**

Sep '04 and May '08

Responsibilities included preparing course materials for Industrial Engineering courses, delivering lectures, developing and grading exams and designing and supervising labs

### **Professional Practice**

Cancer Care Manitoba  
Process Engineer

Winnipeg, MB, Canada  
2012 – 2014

Responsibilities included evaluating, and analyzing the working procedures; designing, and developing new methods that improve the healthcare performance. Further, reviewing the scheduling of operations and developing alternative schedules to improve utilization

Libyan Association of Quality

**Quality Engineer**

Responsibilities included developing a design and analysis of performance of education system and highlighting areas need improvement. Implementing quality robust design technique to optimize processes/products design

Tripoli, Libya

2005 – 2007

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## Scholarships, Grants and Awards

- Natural Sciences and Engineering Research Council of Canada (NSERC): funds for Doctoral Research.
- Ministry of Higher Education and Scientific Research (MOHESR): Full scholarship for pursuing PhD's degree

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## Talks and Presentations

- Engagement For Sustainable Development In Higher Education: A Systemic Approach And Self-Improvement Tool, The First International Maghreb Conference on Developments in Sustainable Development 'Reality and Hope' Feb. 2021 Tunis.
- The Impact of Quality Assurance on Enhancing e-learning Program Effectiveness at the University of Gharyan. A virtual worksop at the University of Gharyan, Libya. Sep.2020
- An introduction to Reference Management tools (using Mendely software to organize and manage references); University of Gharyan. Sep. 2019.
- A proposed model for Evaluating Students' Academic Performance in Postsecondary Institutions Using Design of Experiments, Aug. 26-29, 2019 Almadar Center for conference proceedings. University of Monastir, Tunis.
- An introduction to Minitab Software (using Minitab software in Statistical Data Analysis); University of Gharyan. July, 2019
- A quantitative study of Benign Hematology, Canadian Operational Research Society (CORS) conference 2014 (56th annual conference): Ottawa, Canada.
- Multi-objective Genetic Algorithm for scheduling cellular follow shop Canadian Operational Research Society (CORS) conference May, 2013 (55th annual conference): Vancouver, Canada.

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## Certifications

- Teaching Online certificate: Design, Development, Delivery. Dec.8, 2021 - April 30, 2022. UNIMED, Mediterranean Universities Union, Rome (Italy)
- Entrepreneurship certificate: Lyon University, France March 29 - April 3, 2021.
- Entrepreneurship certificate: South Mediterranean University, Tunis, March 29 - April 3, 2021.
- Technological Transfer Offices (TTOs) training course; held in the framework of Labs of Innovation and Business for Young Actors of start Up, 22 to 25/02/2021, Link Campus University, Rome, Italy.
- Teaching Assistant certificate: University of Manitoba, 2012

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## Professional Affiliations

- Member of APEGM (Association of Professional Engineers and Geoscientists in Manitoba).
  - Member of LAQ (Libyan Association of Quality).
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## Academic Research Projects

- *Education Quality Management: A way Forward to achieve Sustainable Development Goals.* quality education in higher educational institutions are playing vital role to achieve sustainable development goals (SDGs). The objective of this study is to promote sustainable development goals through education quality management. Universities can contribute to SDGs through education, research, and innovation. Some of these main areas of contribution are: Providing students with the knowledge, skills, and motivation to understand and address the SDGs. Further, providing new knowledge, technology, new ways of providing products that meet the SDGs solutions.
- *Investigating Factors Influencing Students' Academic Performance in higher education using Design of Experiment.* The objective of this study is to Identify factors influencing students' performance in the University of Sharjah (UOS) using advanced Design of Experiment (DOE) approach. The academic performance of the students was assessed based on Cumulative Grade Point Average (CGPA) as a measure of academic success with several factors contributing to its level. The addressed factors are: high school. curriculum, high school grade, academic program, Campus, and gender. The main objectives of the study include determining the level of impact of each factor on the academic performance of the students.
- *Healthcare Engineering Management: Qualitative and quantitative methods are Implemented to improve the provided quality care.* further, the root causes of patient dissatisfactions are Investigated to improve patient and family members experience of care. Further, Improving staff working procedures by reviewing demand and capacity, system processes, and using simulation techniques to implement changes and audit to redesigning patient flow and trajectory of care.
- *Doctoral Dissertation: Several metaheuristic algorithms based on Genetic Algorithm (GA), Simulated Annealing (SA), and Particle Swarm Optimization (PSO) are developed for solving the Flowshop Manufacturing Cell (cellular flowshop) Scheduling Problem with Sequence Dependent Setup Times (FMCSPP with SDSTs) considering two performance measures: the total flow time as a mono objective, and the makespan and total flow time combined as a bi-criteria scheduling problem.* The effectiveness and efficiency of the proposed Metaheuristic algorithms are evaluated based on the Relative Percentage Deviation (RPD) from its lower bound, and the robustness of Metaheuristics.
- *Robust design technique and Design of Experiments (DOE) - Examining factors effecting the performance of processes/products and selecting the best combination of the operating conditions. Justifying and investigating variability from the target performance to minimize deviation from target performance; operating with less sensitivity to the changes in the operating conditions.*

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## Publications

- H. M. Elmehdi, E. Zawam Dalah, A. Bukhatir and A. M. Ibrahim, "Retention at the University of Sharjah: Factors and Strategies," 2020 Advances in Science and Engineering Technology International Conferences (ASET), Dubai, United Arab Emirates, 2020, pp. 1-6, doi: 10.1109/ASET48392.2020.9118195. doi: 0.1109/ASET48392.2020.9118195
- Ibrahim, A. El-mekawy, T., Elmehdi, H., and Peng, Q. (2019) , Solving a Solving the Bi-criteria Scheduling Problem of Flowshop Manufacturing cell with Sequence Dependent Setup Times. Applied Soft Computing (under review).
- Ibrahim, A. El-mekawy, T., and Elmehdi, H. (2019) , A Hybrid Particle Swarm Optimization and Simulate Annealing (PSO-SA) algorithm for scheduling a flowshop Manufacturing cell with sequence dependent setup times. Journal of Engineering, Science and Computing Issue II, Volume I, Pages 23-42. Journal of Engineering, Science, and Computing (JESC)
- Elmehdi H.M., Ibrahim AM. (2019) Online Summative Assessment and Its Impact on Students Academic Performance, Perception and Attitude Towards Online Exams: University of Sharjah Study Case. In: Mateev M., Poutziouris P. (eds) Creative Business and Social Innovations for a Sustainable Future. Advances in Science, Technology and Innovation (IEREK Interdisciplinary Series for Sustainable Development). Springer, Cham doi.org/10.1007/978-3-030-01662-3-24
- H. M. Elmehdi, E. Z. Dalah and A. M. Ibrahim, "Impact of Flipped Physics Classes on the Performance of Engineering Students: University of Sharjah Case Study," 2019 Advances in Science and Engineering Technology International Conferences (ASET), Dubai, United Arab Emirates, 2019, pp. 1-6. doi: 10.1109/ICASET.2019.8714477. doi: 10.1109/ICASET.2019.8714477
- Ibrahim, A. Elmehdi, H. (2017) Using Design of Experiment to Investigate Factors Influencing Students' Academic Performance in Postsecondary Institutions: Case Study -University of Sharjah- IFEE 2017 conference proceedings.

- Ibrahim, A. El-Mekawy, T. and Peng, Q. (2014), Robust Metaheuristics for Scheduling Cellular Flowshop with Family Sequence-Dependent Setup Times. *Procedia journal*. doi.org/10.1016/j.procir.2014.01.072
- Ibrahim, A. El-Mekawy, T. and Peng, Q. (submitted), An Efficient Hybridized Particle Swarm optimization Algorithm for Scheduling a flowline manufacturing cell with Sequence-Dependent Family Setup Times. *Journal of Scheduling*. Manuscript No. JOSH-D-14-00109.
- Samarghandi, H., El-Mekawy, T. and Ibrahim, A. (2013), Study the effect of combination of timetabling with sequencing algorithms to solve the no-wait job shop problem, *International Journal of Production Research*, 4942-4965. doi:10.1080/00207543.2013.784410.
- Ibrahim, A. Sharifi, M., Wiebe, V., El-Mekawy, T. and Peng, Q., (2014), A Qualitative Study of Benign Hematology clinic. 56th CORS Annual Conference May 26-28, 2014, Ottawa, Canada.
- Ibrahim, A. El-Mekawy, T. and Peng, Q., (2013), A Multi-Objective Genetic Algorithm for scheduling a Cellular Manufacturing Flowshop. 55th CORS Annual Conference, Vancouver, Canada.
- Ibrahim, A. Shatawa, N (2006), Factors Influencing the Success and Failure of Quality Assurance System and their Implementation in the Libyan Higher Education System, the fourth International Forum on Engineering Education - IFEE2006, 25-27 April 2006, Sharjah , United Arab Emirates
- Ibrahim, A. (2005), Improving the Reliability of the Radiography Inspection Tool. Presented in the fourth Arabic Conference on Material Sciences (ACMS-IV). Tripoli, Libya.

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**Natural languages:** Arabic (*mother tongue*), English (*full professional proficiency*)

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## References

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