Dr. Walid Abdelfattah
Northern Border University
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Kingdom of Saudi Arabia

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Associate Professor in Quantitative Methods

Operations Research - Statistics
Applied Mathematics

ACADEMIC QUALIFICATION

March 2013:	**Ph.D.** Quantitative Methods University of Sfax, Tunisia
November 2008:	**M.Sc.** Scientific Methods of Management University of Monastir, Tunisia
June 1999:	**B.Sc.** Quantitative Methods University of Sfax, Tunisia
December 1997:	**A.Sc.** Quantitative Methods University of Sfax, Tunisia
June 1995:	**Bcc.** Mathematics Secondary School of Teboulba, Tunisia

RECENT TRAININGS

October 2023:	**Operations Research: Optimization Algorithms** National Taiwan University
April 2022:	**Certificate in using Power BI software** Coursera Platform (40 hours)
March 2022:	**Qualification Requirements for Academic Accreditation** Northern Border University, Saudi Arabia
February 2022:	**Certificate In Data Science using Python** Udemy Platform (45 hours)
January 2022:	**IBM Data Analyst Professional Certificate** Coursera Platform (4 Months)
September 2021:	**Certificate in Python for Data Science** Linkedin Learning

September 2021: **Certificate in Interactive English program**
Edraak Platform (120 hours)

PROFESSIONAL EXPERIENCE

February 2025 – Present: **Associate Professor**
Department of Mathematics
College of Science, Arar
Northern Border University, Saudi Arabia

October 2024 – January 2025: **Assistant Professor**
Department of Mathematics
College of Science, Arar
Northern Border University, Saudi Arabia

August 2014 – December 2024: **Assistant Professor**
Department of Mathematics
College of Arts and Science, Rafha
Northern Border University, Saudi Arabia

September 2013 – August 2014: **Assistant Professor**
Department of Quantitative Methods
Faculty of Law, Economics and Management
University of Jendouba, Tunisia

January 2012 – August 2012: **Lecturer**
Department of Quantitative Methods
Institute of Advanced Business Studies
University of Sousse, Tunisia

February 2008 – October 2011: **Lecturer**
Department of Mathematics
Institute of Computer Science and Mathematics
University of Monastir, Tunisia

June 2007 – January 2008: **Head of the financial department**
La Grande Clinique du Centre (Health)
Ksar Hellal, Tunisia

August 2002 – September 2003: **Executive Manager**
Sartex Group, financial department (Textile)
Ksar Hellal, Tunisia

COURSES TAUGHT

▪ Statistics for Data Science	(Master in Data Science, English)
▪ Introduction to Statistics	(Bachelor's Mathematics, English)
▪ Introduction to Statistics	(Bachelor's Computer Science, English)
▪ Introduction to Statistics	(Bachelor's Micro-electronics, French)
▪ Applied Statistics	(Bachelor's Business, Arabic)
▪ Statistical Analysis	(Bachelor's Mathematics, English)
▪ Statistics for Business	(Bachelor's Business, Arabic)
▪ Micro-economy	(Bachelor's Business, Arabic)
▪ Feasibility study and project evaluation	(Bachelor's Business, Arabic)
▪ Probability Theory	(Third cycle Engineering, French)
▪ Probability I	(Bachelor's Mathematics, English)
▪ Probability I	(Bachelor's Computer Science, English)
▪ Probability II	(Bachelor's Mathematics, English)
▪ Stochastic Processes	(Bachelor's Computer Science, English)
▪ Operations Research - LP	(Bachelor's Mathematics, English)
▪ Operations Research I	(Bachelor's Micro-electronics, French)
▪ Graph Theory	(Bachelor's Mathematics, English)
▪ Math I (Analysis)	(Bachelor's Quantitative Methods, French)
▪ Applied Mathematics	(Bachelor's Business, Arabic)
▪ Calculus I	(Bachelor's Mathematics, English)
▪ Calculus II	(Bachelor's Computer Science, English)
▪ Linear Algebra	(Bachelor's Quantitative Methods, French)
▪ Foundations of Mathematics	(Bachelor's Mathematics, English)
▪ Discrete Mathematics	(Bachelor's Computer Science, English)

ACADEMIC / COMMUNITY SERVICE

University

2024: Consultant to the Vice-Rector for Postgraduate Studies and Scientific Research for scientific research development affairs

2023: Consultant to the Vice-Rector for Postgraduate Studies and Scientific Research for KPIs

2023: Member and Rapporteur of the Committee to Reschedule the Unified Study Plan for Mathematics Programs

2023: Member of the standing Committee for the Saudi Classification of Universities

2022: Member of the Supreme Standing Committee to supervise the management and development of the university's organizational structure

2022: Member of the Standing Committee on Governance at the University

2022: In charge of preparing the annual reports of the Vice Rectorate for Postgraduate Studies and Scientific Research

2022: Member of the Special Committee to work on Recommendation "The university should create ways to better promote its research activity, both internally and externally" of the National Commission for Academic Accreditation and Assessment

2022: Member of the Conference Organizing Committee - strategic plan of the university 2020-2025

2022: Member of the Seminars Organizing Committee - strategic plan of the university 2020-2025

2022: Member of the Committee of the Unfunded Research - strategic plan of the university 2020-2025

2022: Member of the committee to enhance research impact through the university's agreement with Ma'aden - strategic plan of the university 2020-2025

Faculty /College

2020: Member of examination and audit of academic promotions forms and faculty member's appointments committee

2019: Member of the progress monitoring of the educational process through the blackboard and virtual education system

2018: Head of the e-learning unit

2018: Member of the central exams committee

Department

2022: Member of the Statistics and KPIs Team in the Quality and Academic Accreditation Committee for the Mathematics Program

2022: Head of the Sixth Standard Team of the Quality and Academic Accreditation Committee for the Mathematics Program

2020: Member of the Study Systems and Plans Committee

2019: Secretary of the mathematics department

2019: Head of the schedules and exams committee

SCIENTIFIC CONTRIBUTIONS

Master's thesis: **Mention: Very Good**
A comparative study between parametric and non-parametric approaches for measuring technical efficiency of Tunisian hospitals.

Doctoral dissertation: **Mention: Very Honorable with Congratulations from the Juries**
A new theoretical framework and approaches for the measurement of dyadic supply chains' technical efficiency by using the DEA methodology.

Publications:

- **W. Abdelfattah**, M. K. Abosoada, D. Sur, P. K. Sahu, K. U. Singh, R. Sivaranjani, *et al.*, "Robust machine learning models for calculating the carbon dioxide desublimation point within natural gas mixtures at low temperature conditions," *Journal of CO_2 Utilization*, vol. 99, p. 103150, 2025.
- M. Jawad, A. Majeed, **W. Abdelfattah**, G. Bognár, S. Kamangar, and A. S. Hendy, "Dynamics of activation energy and gyrotactic microorganisms on radiative Williamson nanofluid with Soret and Dufour bounded by porous nonlinearly stretching surface," *Journal of Radiation Research and Applied Sciences*, vol. 18, no. 3, p. 101595, 2025.
- A. A. I., K. Muhammad, M. Sarfraz, M. Hussein, H. F. Alrihieli, and **W. Abdelfattah**, "Analysis of energy transfer efficiency via Bödewadt flow subject to convective boundary conditions: A comparative study," *Case Studies in Thermal Engineering*, p. 106962, 2025.
- F. Ullah, K. Hasrat, **W. Abdelfattah**, N. B. Khedher, M. Mu, and S. Wang, "Comprehensive life cycle analysis of monocrystalline and polycrystalline solar PV panels in Nanjing, China: Effects on the environment, performance, and recycling opportunities," *Chemical Engineering Journal*, p. 167775, 2025.
- M. Jawad, A. B. M. Ali, **W. Abdelfattah**, and G. Bognár, "Numerical modelling of heat transfer and flow efficiency in the stretching process and extrusion of Jeffrey fluid in a heated cylinder," *International Journal of Thermofluids*, p. 101395, 2025.
- **W. Abdelfattah**, M. K. Abosoada, H. Doshi, H. S. Shreenidhi, M. Parhi, D. Singh, *et al.*, "Development of data driven models to accurately estimate density of fatty acid ethyl esters," *Scientific Reports*, vol. 15, no. 1, p. 30961, 2025.
- R. Hatamleh, H. Alqawqneh, N. Odat, A. Al-Husban, A. M. Khattak, *et al.*, "A new approach to vague soft rough topological spaces," *European Journal of Pure and Applied Mathematics*, vol. 18, no. 3, pp. 6456–6456, 2025.

- R. Hatamleh, N. Odat, A. Al-Husban, A. M. Khattak, **W. Abdelfattah**, *et al.*, “Mapping love: A heptapartitioned neutrosophic machine learning study of university students’ romantic sensations,” *European Journal of Pure and Applied Mathematics*, vol. 18, no. 3, pp. 6484–6484, 2025.
- **W. Abdelfattah**, A. M. Shakir, S. V. Mayani, A. Yadav, S. Ballal, A. Singh, S. Ray, *et al.*, “Machine learning approaches for predicting chemical ionization mass spectrometry response of pesticides in acetone using molecular descriptors,” *Measurement*, p. 118440, 2025.
- **W. Abdelfattah**, M. K. Abosoada, K. Vaghela, P. K. Sahu, K. U. Singh, *et al.*, “Accurate modeling of biochar yield based on proximate analysis,” *Energy Exploration & Exploitation*, 2025.
- H. AlQadi, **W. Abdelfattah**, T. Abbas, A. A. H. Ahmadini, A. I. A. Sayed, and B. Ahmad, “Design of an EWMA control chart by adaptation of smoothing constant based on a function of estimated shift,” *Scientific Reports*, vol. 15, no. 1, p. 24730, 2025.
- A. Divya, M. Jawad, **W. Abdelfattah**, and S. Kamangar, “Entropy generation of engine oil-based two phase tri-hybrid nanofluid due to Riga plate: Modified magnetic field and Cattaneo–Christov heat perceptions,” *Case Studies in Thermal Engineering*, p. 106603, 2025.
- W. H. Hassan, M. D. Kumar, K. Govindarajulu, N. S. S. Singh, M. Jawad, **W. Abdelfattah**, *et al.*, “Thermal assessment of Maxwell–Sutterby fluid with bio-convection and activation energy effects induced by Riga plate via Levenberg–Marquardt algorithm,” *Results in Engineering*, p. 105819, 2025.
- **W. Abdelfattah**, M. K. Abosoada, H. Doshi, H. S. Shreenidhi, M. Parhi, D. Singh, *et al.*, “Machine learning based calculation of refractive index of polyethylene glycol polymer,” *Results in Chemistry*, p. 102441, 2025.
- A. B. M. Ali, M. B. Riaz, N. S. S. Singh, **W. Abdelfattah**, and M. Jawad, “Bioconvective MHD flow of Williamson nanofluid with swimming microorganisms and cross-diffusion effects induced by nonlinear stretching surface in porous media,” *Results in Engineering*, p. 105660, 2025.
- D. Themmozhi, M. E. Rao, B. N. Reddy, J. Arthy, M. Jawad, G. Bognár, **W. Abdelfattah**, *et al.*, “Influence of Stefan blowing on the flow and heat transfer of non-Newtonian Jeffrey nanofluid over an unsteady stretching sheet,” *Results in Engineering*, p. 105375, 2025.
- M. Yasir, M. N. Khan, N. A. Ahammad, **W. Abdelfattah**, and M. Hussein, “Computational investigation of phase change material and gyrotactic microorganism in rheological nanomaterial,” *Journal of Radiation Research and Applied Sciences*, vol. 18, no. 2, p. 101560, 2025.
- **W. Abdelfattah**, M. K. Abosoada, K. Vaghela, P. K. Sahu, K. U. Singh, *et al.*, “Predicting biochar yield from biomass pyrolysis: A comprehensive data-driven approach using machine learning and SHAP analysis,” *Results in Engineering*, p. 105389, 2025.
- **W. Abdelfattah**, A. Mohsin, T. Vora, A. Mahapatro, V. S. Mann, Y. K. Kumar, *et al.*, “Hybrid machine learning models for nanocomposite drilling fluid viscosity optimization,” *Geosystem Engineering*, pp. 1–23, 2025.

- A. M. Abd El-latif, R. Abu-Gdairi, F. Gharib, H. M. Attaalfadeel, **W. Abdelfattah**, *et al.*, "Novel types of supra functions inspired by supra ε-open sets," *European Journal of Pure and Applied Mathematics*, vol. 18, no. 2, pp. 6020–6020, 2025.
- D. Themmozhi, M. Eswara Rao, K. K. Challa, M. Jawad, L. Hamdard, **W. Abdelfattah**, *et al.*, "Analysis of Ti-alloy nanoparticles in paraffin oil for 3D MHD Darcy–Forchheimer flow over a bi-directional stretching surface," *Engineering Reports*, vol. 7, no. 5, p. e70136, 2025.
- M. A. Khan, M. S. Khan, Q. Din, and **W. Abdelfattah**, "Codimension-one and codimension-two bifurcations of a modified Brusselator model," *International Journal of Dynamics and Control*, 2025.
- M. Yasir, A. Ahmed, F. M. Aldosari, **W. Abdelfattah**, H. F. Alrihieli, and I. E. Elesesy, "Fractionalized based rheological features of transient motion of Walter's B fluid in a rectangular oscillatory duct with cosine and sine oscillations," *Journal of Computational Design and Engineering*, vol. 12, no. 4, pp. 205–220, 2025.
- K. Kefi, N. T. Chung, and **W. Abdelfattah**, "Triple weak solution for p(x)-Laplacian like problem involving no flux boundary condition," *Georgian Mathematical Journal*, vol. 32, no. 2, pp. 271–278, 2025.
- N. Assidi, R. Nouira, S. Saafi, **W. Abdelfattah**, and S. Ben Mim, "How does governance quality affect the shadow economy–sustainable development nexus? New insights from a dynamic threshold analysis," *Journal of Economic Studies*, vol. 52, no. 1, pp. 136–160, 2025.
- X. Ma, **W. Abdelfattah**, D. Luo, N. Innab, M. Shuta ywi, and W. Deebani, "Non-cooperative game theory with generative adversarial network for effective decision-making in military cyber warfare," *Annals of Operations Research*, pp. 1–18, 2024.
- B. Zuo, R. Wang, J. Zuo, **W. Abdelfattah**, M. H. Helal, G. Yan, S. Liu, T. Wang, *et al.*, "Thermally-switchable adsorbent for selective uranium extraction from wastewater," *Chemical Engineering Journal*, vol. 500, p. 156484, 2024.
- S. Liu, B. Tao, B. Zuo, K. Zheng, **W. Abdelfattah**, J. Bao, G. Yan, T. Wang, *et al.*, "Function-oriented design principles for adsorbent materials of uranium extraction from seawater," *Chemical Engineering Journal*, vol. 500, p. 156783, 2024.
- K. Sharma, A. Malik, **W. Abdelfattah**, I. Batra, and M. Shabaz, "A smart electricity consumption management framework using internet of things (IoT) to optimize electricity demand," *Measurement: Sensors*, vol. 33, p. 101218, 2024.
- H. M. Zayani, **W. Abdelfattah**, R. Sellami, J. B. Slimane, and A. Kachoukh, "A framework for efficient and accurate automated CLO and PLO assessment," *Engineering, Technology & Applied Science Research*, vol. 14, no. 2, pp. 13362–13368, 2024.
- Y. E. Touati and **W. Abdelfattah**, "Feature imputation using neutrosophic set theory in machine learning regression context," *Engineering, Technology & Applied Science Research*, vol. 14, no. 2, pp. 13688–13694, 2024.
- **W. Abdelfattah** and B. S. Alanazi, "Application of data envelopment analysis to evaluate health regions efficiency in Saudi Arabia," *Engineering, Technology & Applied Science Research*, vol. 14, no. 3, pp. 3902–3908, 2024.

- **W. Abdelfattah**, "Variables selection procedure for the DEA overall efficiency assessment based plithogenic sets and mathematical programming," *International Journal of Scientific Research and Management*, vol. 10, no. 5, pp. 397–409, 2022.
- **W. Abdelfattah**, "A parametric approach to solve neutrosophic linear programming models," *Journal of Information and Optimization Sciences*, vol. 42, no. 3, pp. 631–654, 2021.
- **W. Abdelfattah**, "Neutrosophic data envelopment analysis: An application to regional hospitals in Tunisia," *Neutrosophic Sets and Systems*, vol. 41, pp. 89–105, 2021.
- **W. Abdelfattah** and M. S. Cherif, "Incorporation of preferences into supply chains DEA efficiency: A geometric attribution approach," *Pakistan Journal of Statistics and Operation Research*, pp. 761–774, 2020.
- N. Mansour, M. S. Cherif, and W. Abdelfattah, "Multi-objective imprecise programming for financial portfolio selection with fuzzy returns," *Expert Systems with Applications*, vol. 138, p. 112810, 2019.
- **W. Abdelfattah**, "Data envelopment analysis with neutrosophic inputs and outputs," *Expert Systems*, vol. 36, no. 6, p. e12453, 2019.
- **W. Abdelfattah**, "Supply chains DEA efficiency: Incorporation of decision makers' preferences," *Recent Applications of Data Envelopment Analysis*, p. 213, 2017.
- **W. Abdelfattah** and A. Rebai, "Measurement of dyadic supply chains efficiency under new assumptions using DEA models," *Journal of Applied Sciences*, vol. 16, no. 10, pp. 445–453, 2016.

ANALYTICAL SKILLS

Excel 365	★★★★☆
Google Sheets	★★★☆☆
SQL	★★☆☆☆
Python	★★☆☆☆
R	★★☆☆☆
Power BI	★★★☆☆
Tableau	★★☆☆☆
Lindo / Lingo	★★★★☆
Efficiency Measurement System	★★★★☆
Gurobi	★★☆☆☆

COMPUTER SKILLS

Microsoft Office: Word, Excel, PowerPoint, OneNote

Internet Navigators: Chrome, Firefox, Edge, Explorer

LANGUAGES

Arabic: Native

English: Good level

French: Second language

Italian: Basics

HOBBIES

Tennis Table, Traveling, Reading