WAFIK HACHICHA

Prof. Ph.D, Eng. en Genie Industriel et Logistique

Short Biography

Wafik Hachicha is a Professor in Industrial Engineering. He has an Industrial Engineer Diploma from the National School of Engineering of Tunis (ENIT, Tunisia) since 1999. After a five-year professional experience in various industries, he has obtained his PhD in Mechanical and Manufacturing Engineering in 2009 and HDR in Logistic and Industrial Engineering in 2014 from the University of Sfax, Tunisia. He is a reviewer in many international journals, author or co-author of more than 120 research works include books, journal articles and communications. His specialisation is about applied quantitative methods in quality improvement, industrial engineering, and Supply chain management.

Expériences professionnelles

Professeur en Genie Industriel
Septembre 2019 - Présent (6 ans, 9 mois)
Institut Superieur de Gestion Industrielle de Sfax, Sfax

Maitre de Conferences en Genie Industriel
Septembre 2015 - Septembre 2019 (4 ans)
Institut Superieur de Gestion Industrielle de Sfax, Sfax

Maitre Assistant en Genie Industriel
Août 2009 - Août 2015 (6 ans)
Institut Superieur de Gestion Industrielle de Sfax, Sfax

Assistant en Genie Industriel
Septembre 2007 - Juillet 2009 (1 ans, 10 mois)
Institut Superieur de Gestion Industrielle de Sfax, Sfax

Assistant Contractuel en Genie Industriel
Septembre 2004 - Septembre 2007 (3 ans)
Institut Superieur de Gestion Industrielle de Sfax, Sfax

Ingénieur Méthode et R&D
Avril 2001 - Août 2004 (3 ans, 4 mois)
Societe Patissrie Masmoudi, Sfax

Ingénieur Production
Juillet 1999 - Mars 2001 (1 ans, 8 mois)
Ak Khoutaf - Sekkinox, Sfax

Diplômes

Génie Industriel

2014

Type : Habilitation Universitaire (HU)

Universite de Sfax, SFAX

Contributions à l'Amélioration des Performances des Systèmes Industriels et Logistiques

Thèse en Productique

2008

Type : Doctorat

Ecole National d'Ingenieurs de Sfax, SFAX

Nouvelles approches pour la formation des cellules de production dans le cadre d'une démarche de conception

Mastère de Recherche en Mécanique et Ingénierie

2004

Type : Mastère de recherche

Ecole National d'Ingenieurs de Sfax, Sfax

Développement d'un modéle d'estimation des couts d'assemblages soudés

Diplome National d'Ingenieurs en Genie Industriel

1999

Type : Ingénierie

Ecole National d'Ingenieurs de Tunis, Tunis

Bac Mathématique (Mention Bien)

1994

Type : Baccalauréat

Lycee Ali Belhawane, SFAX

Enseignements

Operation Research (1) – LP, Simplex Method, Branch and Bound...

Septembre 2019 - Juin 2024 (4 ans, 9 mois)

College of Engineering in Taif University, Saudi Arabia

Filière(s) d'enseignement : ingénieur génie industriel

- Introduction to Operations Research.
- Formulation of linear programming problems.
- Graphical solution.
- The Simplex algorithm, Big M method and Two Phase method
- Duality-Primal Problem
- Sensitivity analysis (Dual Price - Reduced Cost)
- Integer programming, 0-1 Integer programming and Mixed integer programming
- Branch and Bound and Cutting Plane Techniques
- Applications in Logistic and industrial Engineering Problems
- Introduction to the Problem complexity
- Excel Solver - Lingo Software

Operation Research (2) - Network Flows Models, Dynamic Programming, Goal Programming

Septembre 2019 - Juin 2024 (4 ans, 9 mois)

College of Engineering in Taif University, Saudi Arabia

Filière(s) d'enseignement : ingénieur génie industriel

▪Algorithms for Transportations and Assignments: The Stepping-Stone Method, The Hungarian Method
▪Networks Flow and models: Minimal spanning tree, shortest-route algorithms, maximum-flow algorithms, minimum cost capacitated network algorithms, Critical path(CPM) algorithms
▪Dynamic Programming (DP): Mathematical recursive nature computation (such as Binomial Coefficients and Fibonacci Numbers and Sequence), Knapsack Problem, Shortest-Route Problem, Multiperiod Production and Inventory Planning Problem…
▪Goal Programming (GP): Introduction to a multi-objective programming, Formulation, Goal Programming Algorithms, the Weights Method, the Preemptive Method

Quality Control (Statistical Process Control)

Septembre 2019 - Juin 2024 (4 ans, 9 mois)

College of Engineering in Taif University, Saudi Arabia

Filière(s) d'enseignement : ingénieur génie industriel

- Use and interpret normal probability distribution in industrial engineering training
- Estimate and interpret Confidence Intervals.
- Explain and interpret Hypothesis Testing to make statement(s) and decision regarding unknown population parameter values based on sample data.
- Define and describe Quality Control tools and methods
- Design and interpret control charts for variables
- Estimate and interpret process and machine capability.
- Analyze data using Ms Excel and Minitab software for statistical quality control

Design of Industrial Experiments

Septembre 2019 - Juin 2024 (4 ans, 9 mois)

College of Engineering in Taif University, Saudi Arabia

Filière(s) d'enseignement : ingénieur génie industriel

- Build a solid foundation for the statistical theory for experimental design (One-sample z-test, One sample t-test, Two-sample t-test (z-test), Paired t-test, F-test / Hartley's Fmax test, One-way ANOVA, Two-way (taw-factor) ANOVA without Replication, Two-way (taw-factor) ANOVA with Replication
- Apply When and How apply Full Factorial Designs, Fractional Factorial Designs, Taguchi Design and Response Surface Methodology…
- Apply Optimization using Design of experiments
- Build appropriate statistical models for designed experiments, perform data analysis using appropriate software, and communicate results without use of statistical jargon.
- Construct appropriate experimental designs for given problems: sample size determination, choice of levels of variables, designs with restrictions on randomization, utility functions for measuring design objectives, use of simulation to characterize properties of designs.

Production Planning & Control

Septembre 2019 - Juillet 2024 (4 ans, 10 mois)

College of Engineering in Taif University, Saudi Arabia

Filière(s) d'enseignement : ingénieur génie industriel

▪Recognize the objectives, functions, applications of Production Systems, Production Planning and Control (PPC), and Operations Management
▪Explain different qualitative and quantitative demand forecasting techniques mainly regression analysis and time series based models
▪Explain the Inventory Management concept and the different Inventory control models and techniques such as Economic order quantity, Economic Production Quantity, etc.
▪Summarize various Aggregate Production Planning strategies (level, mixed, chase) and policies, Materials Requirements Planning records and calculation
▪Solve sequencing and scheduling problems (Apply the assignment method for loading jobs (0-1 formulation, Least Branch and Bound, the Hungarian Method), Name, describe and apply each of the priority sequencing rules (FCFS, LPT, etc.), Use Johnson's rule, Define finite capacity scheduling, Use linear programming models to solve scheduling problems, etc.
▪Recognize the concept of the Kanban Method, Just in time (JIT), and introduce the lean Manufacturing concept.

Modeling of Logistics Systems - Markov Chains, Petri Net

Septembre 2010 - Juin 2019 (8 ans, 9 mois)

Institut Supeirur de Gestion Industrielle de Sfax

Filière(s) d'enseignement : LAGL

Industrial Systems Modeling & Simulation

Septembre 2004 - Juin 2018 (13 ans, 9 mois)

Filière(s) d'enseignement : LAGL MPGL ingénieur génie industriel

Documentation of Quality Systems (ISO 9001 - ISO 22001 - ISO 14001)
Septembre 2004 - Juin 2019 (14 ans, 9 mois)
Institut Superieur de Gestion Industrielle de Sfax
Filière(s) d'enseignement : LAGQ MPQSE

Activités de recherche

Publications

Aljaly, K., Masmoudi, F., Aljuaid, A. M., & **Hachicha, W. (2025).** Addressing Aircraft Maintenance Delays Using a DMAIC-FMEA Framework: Insights from a Commercial Aviation Case Study. *Applied Sciences*, 15(22), 12164. https://doi.org/10.3390/app152212164

Ammeri, A., Selmi, S., Aljuaid, A. M., & **Hachicha, W. (2025).** The Mutual Interaction of Supply Chain Practices and Quality Management Principles as Drivers of Competitive Advantage: Case Study of Tunisian Agri-Food Companies. *Sustainability*, 17(21), 9429. https://doi.org/10.3390/su17219429

Aljuaid, A. M., Koubâa, M., Ammar, M. H., Kammoun, K., & **Hachicha, W. (2024).** Mathematical Programming Formulations for the Berth Allocation Problems in Container Seaport Terminals, *Logistics*, 8(2), 50. https://doi.org/10.3390/logistics8020050

Nourhene Akrout, Soumaya Hajji, Sedki Karoui, Sirine Choura, **Wafik Hachicha**, Awad M. Aljuaid; Mohamed Chamkha; Salem Bouri **(2024).** Groundwater geochemical modeling under severe climate conditions for sustainable agricultural development, the case of Chougafiya Basin, central Tunisia, *AQUA - Water Infrastructure, Ecosystems and Society*, Vol. 73 (9), pp. 1899–1916, DOI: 10.2166/aqua.2024.202

Mariem Belghith, Hanen Ben Ammar, Abdelkarim Elloumi, **Wafik Hachicha (2024).** A new rolling forecasting framework using Microsoft Power BI for data visualization: A case study in a pharmaceutical industry, *Annales Pharmaceutiques Françaises*, 82(3), pp. 493-506, DOI: 10.1016/j.pharma.2023.10.013

Awad Aljuaid, Maisa Koubâa, Mohamed Haykal Ammar, Karim Kammoun, **Wafik Hachicha (2024)** Mathematical Programming Formulations for the Berth Allocation Problems in Container Seaport Terminals, *Logistics*, 8(2), 50. DOI:10.3390/logistics8020050

AL-Hussein, A.A.M.; Hamed, Y.; Bouri, S.; Hajji, S.; Aljuaid, A.M.; **Hachicha, W. (2023).** The Socio-Economic Effects of Floods and Ways to Prevent Them: A Case Study of the Khazir River Basin, Northern Iraq. Water 2023, 15, 4271. DOI: 10.3390/w15244271

Mouna Derbel, Awad M. Aljuaid, Wafik Hachicha, **(2022)**. Empirical Safety Stock Estimation Using GARCH Model, Historical Simulation, and Extreme Value Theory: A Comparative Study, *Applied Sciences*, 12(19), 10023. DOI: 10.3390/app121910023

Ameni Dammak, Sirine Ben Slima, Marco D. R. Gomes da Silva, Riadh Ben Salah, Awad M. Aljuaid, Wafik Hachicha and Mohamed Bouaziz **(2022)**. Antioxidant and Antibacterial Activities of a Purified Polysaccharide Extracted from Ceratonia siliqua L. and Its Involvement in the Enhancement Performance of Whipped Cream, *Separations*, 9(5), 117. DOI: 10.3390/separations9050117

Mohsen Ben Mabrouk, Manel Elmsalmi, Awad M. Aljuaid, **Wafik Hachicha** and Sami Hammami **(2022)**. Joined Efficiency and Productivity Evaluation of Tunisian Commercial Seaports Using DEA-Based Approaches, *J. Marine Science Engineering*, 10(5), 626. DOI: 0.3390/jmse10050626

Abdessalem Jerbi, **Wafik Hachicha**, Awad M. Aljuaid, Neila Khabou Masmoudi and Faouzi Masmoudi. **(2022)** Multi-Objective Design Optimization of Flexible Manufacturing Systems Using Design of Simulation Experiments: A Comparative Study, *Machines* 10(4), 247; DOI: 10.3390/machines10040247

Abdessalem Jerbi, Haifa Jribi, Awad M. Aljuaid, **Wafik Hachicha** and Faouzi Masmoudi **(2022)** Design of Supply Chain Transportation Pooling Strategy for Reducing CO2 Emissions Using a Simulation-Based Methodology: A Case Study, *Sustainability*, 14(4), 2331 DOI: 10.3390/su14042331

Maryam Dhahri, Manel Elmsalmi, Awad M. Aljuaid and **Wafik Hachicha (2022).** Seaport Terminals Risks Prioritization Using a Structural Modeling-Based Approach: A Real Case Study, *J. Marine Science Engineering*, 10(2), 217, DOI: 10.3390/jmse10020217

Soumaya Hajji, Nabila Allouche, Salem Bouri, Awad M. Aljuaid and Wafik Hachicha **(2022)** Assessment of Seawater Intrusion in Coastal Aquifers Using Multivariate Statistical Analyses and Hydrochemical Facies Evolution-Based Model, *Int. J. Environ. Res. Public Health*, 19(1),155; DOI:10.3390/ijerph19010155

Manel Elmsalmi, **Wafik Hachicha**, Awad M. Aljuaid **(2021)** Modeling sustainable risks mitigation strategies using a morphological analysis-based approach: A real case study, Sustainability, 13(21), 12210 DOI: 10.3390/su132112210

Soumaya Hajji, Naima Yahyaoui, Sonda Bousnina, Salem Bouri, **Wafik Hachicha**, Awad M. Aljuaid **(2021)**. Using a Mamdani Fuzzy Inference System Model (MFISM) for Ranking Groundwater Quality in an Agri-Environmental Context: Case of the Hammamet-Nabeul Shallow Aquifer (Tunisia), Water, 13(18,) 2507 DOI: 10.3390/w13182507

Mohamed Ali Elleuch, Mallek, M., Frikha, A., **Wafik Hachicha**, Aljuaid, A.M., Andejany. **(2021)** Solving a multiple user energy source selection problem using a fuzzy multi-criteria group decision-making approach, Energies, 14(14), 4313 DOI: 10.3390/en14144313

Amira Kammoun, **Wafik Hachicha**, Awad M. Aljuaid **(2021)** Integrating quality tools and methods to analyze and improve a hospital sterilization process, *Healthcare*, 9(5), 544, DOI: 10.3390/healthcare9050544

Manel Elmsali, **Wafik Hachicha**, Awad M. Aljuaid **(2021)** Prioritization of the Best Sustainable Supply Chain Risk Management Practices Using a Structural Analysis Based-Approach, *Sustainability*, Vol. 13, No. 9 2021, 13(9), 4608; DOI: 10.3390/su13094608

Faiez Ghorbel, **Wafik Hachicha**, Younes Boujelben, Awad M. Aljuaid **(2021)**. Linking Entrepreneurial Innovation to Effectual Logic, *Sustainability*, *Vol. 13, No. 5,* 2626; DOI:10.3390/su13052626

Mouna Derbel, **Wafik Hachicha**, Awad M. Aljuaid **(2021)**. Sensitivity Analysis of the Optimal Inventory-Pooling Strategies According to Multivariate Demand Dependence, *Symmetry*, *Vol. 13, No. 2, 328*; https://doi.org/10.3390/sym13020328

Ahlem Jellali, **Wafik Hachicha**, Awad M. Alhuaid **(2021)** Sustainable Configuration of the Tunisian Olive Oil Supply Chain using a Fuzzy TOPSIS-based approach, ***Sustainability***, *Vol. 13*, No. 2, 722; DOI:10.3390/su13020722

Mouna Derbel, **Wafik Hachicha (2020)** "The Impact of Demand Dependence on Optimal Inventory Level and Pooling Effect, International Journal of Industrial Engineering & Management Science, Vol. 7, No. 2, pp 5-63

Rim Daoud, Manel Kammoun, **Wafik Hachicha (2020)** "Solving a routing problem of collect infectious healthcare waste with stochastic demand: case of Sfax Governorate in Tunisia, *World Review of Intermodal Transportation Research*, Vol. 9, No. 3, pp. 297-311

Wafik Hachicha, Mounir Benaissa, Amira Kammoun, Hamed Almalki **(2019)** "A Simulation Study to organize a Hospital Sterilization-Process of Maternity-Service", *International Journal of Engineering Research & Technology* (IJERT), Vol. 8 Issue 10, 2019, Page 140-146

Enacdrement de Theses

1. Student: Amira KAMMOUN
Title: Evaluation and improvement of sterilization services performance: the case of Sfax hospitals
Major: Management Science: Logistics and Production
Institution: Faculty of Economics and Management of Sfax, Tunisia
Defended on January 2019

2. Student: Mouna DERBEL
Title: The effect of demand dependency structure on the determination of the optimal procurement strategy using copula
Major: Management Science: Logistics and Production
Institution: Faculty of Economics and Management of Sfax, Tunisia
Defended on July 2019

3. Student: Manel MSALMI
Provisional Title: Using Prospective analysis base framework for the risk management in Supply Chains
Major: Management Science: Logistics and Production
Institution: Faculty of Economics and Management of Sfax, Tunisia
Defended on July 2019

4. Student: Rim DAOUD
Title: Incinerator Locating Problem and Healthcare Waste Routing Problem in Sfax Governorate- Tunisia
Major: Management Science: Operational Research and Decision Aid Support
Institution: Faculty of Economics and Management of Sfax, Tunisia
Defended on January 2020

5. Student: Ahlem JALLELI
Title: Sustainable Configuration of the Tunisian Olive Oil Supply Chain
Major: Management Science: Operational Research and Decision Aid Support
Institution: Faculty of Economics and Management of Sfax, Tunisia
Defended on June 2021

Spécialités

Conception et Exploitation des Systèmes de Production (Design and Manufacturing Management Systems)

Modélisation & Amélioration des Performances des Systèmes Complexes (Complex Systems Modeling & Performance Improvement)

Management des Risques et Maitrise des processus Industriels (Risk Management & Process Control and Monitoring)

Protection de l'Environnement et Développement Durable (Environmental Protection and Sustainable Development)