

Zuhier Alakayleh, Ph.D.

Associate Professor,

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Biography

Dr. Zuhier Alakayleh is an Associate Professor in the Department of Civil and Environmental Engineering at Mutah University, Jordan. He holds a Ph.D. in Civil Engineering from Auburn University, where he graduated with a perfect GPA of 4.0, and M.Sc. and B.Sc. degrees in Civil Engineering from the University of Jordan. His research focuses on water resources engineering, advanced water treatment technologies, contaminant fate and transport, groundwater hydraulics, and numerical simulation of groundwater flow and contamination, with a strong emphasis on interdisciplinary collaboration and innovative approaches to environmental challenges in arid and semi-arid regions. Dr. Alakayleh is also actively involved in international projects addressing global water challenges, contributing to sustainable water management and fostering partnerships to develop practical, science-based solutions.

Education

- **Ph.D.** Civil Engineering, Auburn University, Auburn, Alabama, USA, 2019. GPA: 4.0, Dissertation title: “Qualifying the Saturated Hydraulic Conductivity and Corresponding Infiltration Processes”.
- **M.Sc.** Civil Engineering/Water and Environment, the University of Jordan, Amman, Jordan, 2013. Thesis title: “Domestic Water Demand Forecasting and Management: Case Study of Irbid, Jarash, and Ajlun Governorate.”
- **B.Sc.** Civil Engineering, the University of Jordan, Amman, Jordan, 2009.

Professional Experience

- **Associate Professor**, Department of Civil and Environmental Engineering, Mutah University, Karak, Jordan (Nov 2025 – Present).

- **Head**, Department of Civil and Environmental Engineering, College of Engineering, Mutah University, Karak, Jordan (Oct 2025 – Present).
- **Assistant Dean of Student Affairs**, Deanship of Student Affairs, Mutah University, Karak, Jordan (Oct 2024 – Oct 2025).
- **Assistant Professor**, Department of Civil and Environmental Engineering, Mutah University, Karak, Jordan (Jan 2020 – Nov 2025).
- **Research and Teaching Assistant**, Samuel Ginn College of Engineering, Department of Civil Engineering, Auburn University (Jan 2016 – Dec 2019).
- **Head of Maintenance and Direct Implementation Section**, National Electric Power Company (NEPCO), Amman, Jordan (Jan 2012 – Jan 2016).
- **Civil Engineer**, National Electric Power Company (NEPCO), Amman, Jordan (May 2009 – Jan 2012).

Institutional and Professional Service

- **Member, Technical Committee on Water and Wastewater**, *Jordan Standards and Metrology Organization (JSMO)*, Amman, Jordan. Contributing to national standards for wastewater, reclaimed water, irrigation water, and swimming pool.
- **Member, Graduate Studies Committee**, Department of Civil and Environmental Engineering, Mutah University, Karak, Jordan.
- **Member, Comprehensive Examination Committee**, Department of Civil and Environmental Engineering.
- **Member, E-Learning Committee**, Department of Civil and Environmental Engineering.

Funded projects

- **SafeAgroMENA Project (2022-present)**. This project is supported by the Dutch Ministry of Foreign Affairs under the Water and Development Partnership Programme. The project focuses on addressing water scarcity in the MENA region by promoting sustainable water management and agricultural resilience through interdisciplinary collaboration. The SafeAgroMENA team employs participatory methodologies and integrates natural and social sciences to develop innovative solutions for water challenges while empowering underrepresented groups in the water sector. The project involves partners from Jordan, Egypt, Iraq, and the Netherlands. The project team brings together people from academia, non-governmental, and governmental organizations.

Dr. Alakayleh is a contributing team member at Mutah University.

- **eMaster in Water Resources Engineering (2020 –2023).** This project is co-funded by the Erasmus+ Program of the European Union with a total budget of €924,000. It aims to enhance the existing M.Sc. curricula and develop eLearning modules for a new eMaster program in water resources engineering at the partner institutions. The project's ultimate goal is to prepare future professionals and scientists with the technical expertise and managerial skills needed to address current and future water challenges through innovative and sustainable solutions. The consortium includes Mutah University (Jordan), the University of Jordan (Jordan), Islamic University of Gaza (Palestine), Al-Quds University (Palestine), Vrije Universiteit Brussel (Belgium), IHE Delft (the Netherlands), and Eummena (Belgium). Dr. Alakayleh is a contributing team member at Mutah University.

Research Interest

- Water resources engineering and management.
- Advanced water treatment techniques
- Contaminant fate and transport.
- Groundwater hydraulics and hydrology.
- Numerical modeling and simulation of groundwater flow and contaminant transport.
- Water quality assessment and sustainability in arid and semi-arid regions.

Publications

- **Alakayleh, Z.** (2025). Diclofenac Adsorption from Contaminated Water onto Olive-Leaf-Derived Adsorbent. *Jordan Journal of Pharmaceutical Sciences*, 18(1), 132-145.
- **Alakayleh, Z.** (2025). From inactive biomass in removing amoxicillin to new active chitosan-biomass composite adsorbents. *Results in Engineering*, 25, 103709.
- **Alakayleh, Z.** (2025). Sulfuric acid-activated carbon from guava leaves for paracetamol adsorption. *Results in Engineering*, 25, 103685.
- **Alakayleh, Z.,** Al-Akayleh, F., Al-Remawi, M., Mahyoob, W., Hajar, H. A. A., Esaifan, M., & Shawabkeh, R. (2024). Utilizing olive leaves biomass as an efficient adsorbent for ciprofloxacin removal: characterization, isotherm, kinetic, and thermodynamic analysis. *Environmental Monitoring and Assessment*, 196(6), 562.
- Saimenh, A. S., **Alakayleh, Z.,** Al-Akayleh, F., Mahyoob, W., Al-Remawi, M., Abu Hajar, H. A.,

Reyad Shawabkeh & Ali Agha, A. S. (2024). Chemically activated olive leaves biomass for efficient removal of methylene blue from contaminated aqueous solutions. *Emergent Materials*, 7(2), 603-617.

- Zeidan, M., Al-soud, M., Dmour, M., **Alakayleh, Z.**, & Al-Qawabah, S. (2023). Integrating a solar PV system with pumped hydroelectric storage at the Mutah university of Jordan. *Energies*, 16(15), 5769.
- Al-Hamaiedeh, H. D., Al-Rfo'u, F. A., Al-Hamaide, K. D., El-Hasan, T. A., & **Alakayleh, Z. A.** (2023). Springs Water Quality Assessment for Drinking Purposes: A Case Study of Bsaira, Jordan. *The Iraqi Geological Journal*, 48-56.
- **Alakayleh, Z.**, Fang, X., & Clement, T. P. (2022). A simple method for correcting the effects of initial soil moisture on Modified Philip-Dunne Infiltrometer drawdown curves. *Groundwater for Sustainable Development*, 18, 100775.
- Mahyoob, W., **Alakayleh, Z.**, Hajar, H. A. A., Al-Mawla, L., Altwaiq, A. M., Al-Remawi, M., & Al-Akayleh, F. (2022). A novel co-processed olive tree leaves biomass for lead adsorption from contaminated water. *Journal of Contaminant Hydrology*, 248, 104025.
- **Alakayleh, Z.**, Fang, X., & Clement, T. P. (2019). A comprehensive performance assessment of the modified Philip–Dunne infiltrometer. *Water*, 11(9), 1881.
- **Alakayleh, Z.**, Clement, T. P., & Fang, X. (2018). Understanding the changes in hydraulic conductivity values of coarse-and fine-grained porous media mixtures. *Water*, 10(3), 313.

Conference Proceedings

- The international Environmental Modelling and software Society (**iEMSs**) 2022, Brussels, Belgium, July 4-8, 2022.
- The American Geophysical Union (**AGU**) Fall Meeting 2017, New Orleans, Louisiana, USA, December 11-15, 2017.

Graduate Supervision and Examination

- **Supervision:**
 - Omar Alhjoj (Chair), Master's Thesis, Department of Civil and Environmental Engineering, Mutah University. Thesis title: [Adsorptive Removal of Selected Pharmaceutical Pollutants from Contaminated Water Using Sawdust and Chitosan-Based Adsorbents].

- Anood Altawahia (Co-Chair), Master's Thesis, Department of Civil and Environmental Engineering, Mutah University. Thesis title: [Water Demand Modeling and Management in AlBalqa Governorate under Climate Change Effect].
- **Committee Member:** served as a committee member for multiple master's thesis defences in the Department of Civil and Environmental Engineering, Mutah University. Responsibilities included evaluating research quality, providing feedback, and participating in oral defence assessments on topics related to water resources and environmental engineering.

Peer Reviewer for Academic Journals and Conferences

Served as a peer reviewer for several prestigious journals and conferences, contributing his expertise in water resources engineering, environmental sustainability, and advanced water treatment technologies. His reviews ensure the scientific rigor and quality of published research. Journals and conferences he has reviewed for include, but are not limited to:

- Environmental Technology Reviews.
- Acta Agriculturae Scandinavica, Section B - Plant Soil Science.
- Sustainability.
- Jordan Journal of Pharmaceutical Sciences.
- Water Journal.
- Biomass Conversion and Biorefinery.
- Environmental Earth Sciences.
- 2nd international Scientific Conference of Water (ISCW-2023).

Certifications and Training

- **Didactical Training Programme - SafeAgroMENA (2023):** Awarded by IHE Delft, Netherlands. Participated in an interactive training program focused on aligned teaching and active learning strategies, development of learning objectives, and assessment design. The program also included a curriculum workshop held in Amman and multiple reflection assignments on teaching and learning practices.
- **Groundwater Flow & Transport Modeling with GMS (2016):** Completed a comprehensive training course on groundwater modeling using GMS software, held in Provo, Utah, USA. Topics covered included MODFLOW, MT3DMS, and parameter estimation using PEST. The course emphasized practical skills in conceptual modeling, grid creation, model calibration, particle tracking, and transport modeling.

Computer Software and Programming Languages

Proficient in a wide range of computer software and programming languages essential for water resources engineering, hydrology, and environmental studies. Expertise includes groundwater modeling tools such as **GMS**, **MODFLOW**, **SEAWAT**, and **RT3D**; hydrological modeling software like **HEC-HMS**; and soil water simulation using **Hydrus**. Skilled in geospatial analysis with **QGIS** and **ArcGIS** and technical drawing using **AutoCAD**. Familiar with programming using **Python** and **Visual Basic for Applications**. Additionally, experienced in project management tools like **Primavera** Project Planner, structural analysis software such as **Prokon**, and advanced use of **Microsoft Office** applications for data analysis and reporting.

Teaching Courses

- At the *Department of Civil and Environmental Engineering*, Mutah University, Karak, Jordan.
 - Computational Methods in Water and Environmental Engineering (Graduate Level).
 - Groundwater Hydraulics and Contamination (Graduate Level).
 - Hydraulics.
 - Hydrology.
 - Engineering Economy.
 - Applied Hydraulics.
 - Groundwater Engineering.
 - Water Structures.
 - Irrigation and Drainage Engineering.
 - Environmental Lab.
 - Hydraulics Lab.
 - Institutional setup for waste management and reuse.
- At the *Department of Civil Engineering*, Auburn University, Auburn, AL, USA.
 - Civil Engineering Analysis (Role: TA).
 - Hydraulics Lab (Role: TA).