

Husam A. Abu Hajar, Ph.D.

Dr. Abu Hajar is a professional researcher, consultant, and instructor with more than 10 years of broad experience in water resources and environmental engineering fields. His areas of expertise include water and wastewater treatment, storm water best management practices, solid waste management, sustainable development, green growth, and environmental and social impact assessment. He earned his Ph.D. and M.Sc. degrees in Civil and Environmental Engineering from the Ohio University and his B.Sc. in Civil Engineering from the University of Jordan. Since Sep 2016, he has been working as an Assistant Professor and Researcher at the University of Jordan where his duties involve teaching undergraduate and graduate courses, conducting research studies in multiple water resources and environmental engineering streams, drafting and publishing reports and scientific articles, advising undergraduate and graduate students, quality assurance and accreditation, and training and consulting services. Dr. Abu Hajar has been a leader and team member in multiple consulting, research, and capacity building projects funded by national and international organizations such as the European Union (EU), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the United States Agency for International Development (USAID), the Agence Française de Développement (AFD), and others. Between Jan 2010 and Aug 2016, Dr. Abu Hajar worked at the Institute of Sustainable Energy and the Environment (ISEE) – Ohio University and the Ohio Research Institute for Transportation and the Environment (ORITE), where he was a key member of the research team which undertook several projects funded by the National Science Foundation (NSF), the Ohio Department of Natural Resources (ODNR), Wayne National Forest, and the Ohio Department of Transportation (ODOT). Dr. Abu Hajar has won several awards for his distinguished work and excellent writing and presentation skills at multiple international competitions and conferences.

Personal Information

- Date of birth: June 28, 1986.
- Gender: Male.
- Nationality: Jordanian.
- Languages: Arabic (native) and English (fluent).

Contact Information

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LinkedIn account: <https://www.linkedin.com/in/husam-abu-hajar-bbb95a74/>

Education

Ph.D. Civil Engineering, the Ohio University, Jan, 2012 – July, 2016

- GPA: 3.91 / 4.00.
- Dissertation title: “Sustainable Cultivation of Microalgae Using Diluted Anaerobic Digestate for Biofuels Production”.

M.Sc. Civil Engineering, the Ohio University, Jan, 2010 – Dec, 2011

- GPA: 3.97 / 4.00.
- Thesis title: “Exfiltration Trenches for Post Construction Storm Water Management for Linear Transportation Projects: Field Study of Suspended Materials”.

B.Sc. Civil Engineering, the University of Jordan, Oct, 2004 – Feb, 2009

- GPA: 3.78 / 4.00.

Research Interests

- Sustainable development and green growth.
- Solid waste management.
- Renewable and sustainable energy.
- Water and wastewater treatment.
- Statistical modeling in engineering.
- Storm water best management practices.
- Modeling in environmental engineering.
- Microalgae cultivation.

Experience

Assistant Professor of Civil Engineering at the University of Jordan, Sep, 2016 – present

- Teaching Civil and Environmental Engineering courses at the undergraduate and graduate levels such as Water Supply Engineering, Environmental Engineering, Environmental Engineering Laboratory, Engineering Economy, Engineering Statistics (B.Sc. course), and Applied Statistics for Engineers (M.Sc. course).
- Thesis advisor for Civil Engineering M.Sc. students.
- Member of Civil Engineering M.Sc. thesis committees.
- Capstone design project supervisor for Civil Engineering B.Sc. students.
- Researcher in multiple water resources and environmental engineering areas.
- Consultant in the solid waste management, water resources management, sustainable development pathways, water and wastewater treatment, and environmental and social impact assessment fields.
- Providing training services for students and professionals in multiple environmental science and engineering fields.

- Implementing and participating in capacity building projects and interventions aiming at enhancing the quality of education and utilizing modern technology tools in engineering education.
- Member of several department and college committees such as the Civil Engineering (CE) Department ABET committee (since Oct, 2016, and the CE Department has been ABET accredited effective May, 2019) and the School of Engineering Quality Assurance Committee.

Research graduate assistant at the Ohio University, Jan, 2010 – Aug, 2016

- Research assistant for the National Science Foundation (NSF) funded project “Sustainable Housing through Holistic Waste Stream Management and Algal Cultivation”.
- Research assistant for the Ohio Department of Natural Resources (ODNR) and Wayne National Forest funded project “Acid Mine Drainage Treatment for the Production of Paint Pigments”.
- Research assistant for the Ohio Department of Transportation (ODOT) funded project “Exfiltration Trenches for Post Construction Storm Water Management for Linear Transportation Projects”.
- Graduate assistant for several tasks and small-scale projects including water and wastewater treatment modeling, storm water best management practices, aquatic chemistry and equilibrium, algal growth optimization and modeling, and local solid waste recycling and recovery projects.
- Teaching assistant for graduate level courses in the Civil Engineering Department such as Advanced Wastewater Treatment, Water Quality Engineering, and Solid Waste Management.

Engineer at the National Electric Power Company (NEPCO), Amman, Jordan, Jun, 2009 – Dec, 2009

- Construction projects engineer (supervisor).

Engineer at El Concorde Construction Company, Amman, Jordan, Feb, 2009 – May, 2009

- Quantity surveying and cost estimation.
- Preparation of technical and financial proposals.

Graduate Students Advising - the University of Jordan

- Lubna Qaraleh, Civil Engineering M.Sc. student. Thesis title: “Development of data bank system for waste management in the municipalities of Jordan: Case of Deir Alla”. Graduated in May, 2020.
- Aula Mahasneh, Civil Engineering M.Sc. student. Thesis title: “Investigation of the situation of informal sector in the solid waste management system in Jordan”. Graduates in Dec, 2020.
- Tareq Al Dheirat, Civil Engineering M.Sc. student. Thesis title: “Techno-economic assessment for reactivation of the existing composting plant located in Deir Alla”. Graduates in May, 2021.

- Dima Bakeer, Civil Engineering M.Sc. student. Thesis title: “Techno-Economic Assessment of the Biological Treatment for the Agricultural Waste in Jordan: Case of Dhlail District”. Graduates in May, 2021.

Funded Projects

- **RESERVOIR: Sustainable groundwater RESources managEmEnt by integrating earth observation deriVed monitoring and fIOW modellIng Results** (Mar 2020 – Mar 2024).

This project is part of the PRIMA program supported by the EU’s Horizon 2020 research and innovation program and combines partners from Jordan, Italy, Turkey, and Spain. The main aim of RESERVOIR is to provide new products and services for a fruitful and sustainable groundwater management model which will be developed and tested in four water-stressed Mediterranean pilot sites in Italy, Spain, Turkey, and Jordan, and then be applicable to other regions via an interdisciplinary approach. Dr. Abu Hajar represents the University of Jordan in the consortium.

- **eMaster in Water Resources Engineering** (Jan 2020 – Jan 2023).

This project is co-funded by the Erasmus+ Program by the EU with a total amount of Euro 924,000. This project aims at improving the existing M.Sc. curricula and developing eLearning curricula for a new eMaster program in water resources engineering at the partner institutions. The ultimate goal is to equip future professionals and scientists with the technical and managerial knowledge and skills to solve the current and future water challenges using innovative solutions. The project consortium includes the University of Jordan, Mutah University (Jordan), Islamic University of Gaza (Palestine), Al-Quds University (Palestine), Vrije Universiteit Brussel (Belgium), IHE-Delft (the Netherlands), and Eummena (Belgium). Dr. Husam Abu Hajar is the project coordinator at the University of Jordan.

- **Waste to (Positive) Energy project (Wt(P)E): Universities Cooperation with Jordanian Universities in frame of Supporting Refugees Hosting Communities in Sector of Waste Management** (May 2019 – Oct 2020).

This project is supported by the GIZ and the project consortium includes the University of Rostock (Germany), Technische Universität Dresden (Germany), Hamburg University of Technology (Germany), the University of Jordan, German Jordanian University (Jordan), Mutah University (Jordan), and Jordan University of Science and Technology (Jordan). The project aims to provide technical and financial support to Jordanian municipalities to strengthen their capacity in the solid waste management sector. A collaboration is established between the universities and the local municipalities to conduct research studies to address the problems and challenges the municipalities are facing in the solid waste management sector. Dr. Husam Abu Hajar is the project coordinator at the University of Jordan and his responsibilities include supervising and guiding M.Sc. students in conducting their research on different solid waste management topics. Dr. Abu Hajar has also conducted many semi-structured interviews with different stakeholders from the waste management sector such as staff from the Ministry of

Environment, municipalities, landfills and disposal sites, and informal scavengers and recyclers.

- **Environmental and Social Impact Assessment of the Green Corridor Project Overhead Lines** (Aug 2019 – Mar 2020).

This project was funded by the AFD and was awarded by the National Electric Power Company (NEPCO) to the Water, Energy, and Environment Center at the University of Jordan in Aug 2019 for a total of USD 10,275. Dr. Husam Abu Hajar was the project coordinator and was responsible for the preparation of the technical and financial proposals; managing the different work packages; and drafting the inception report, final report, and environmental and social commitment plan (ESCP).

- **Implementation of Capacity Building Training for Laboratory Technicians of Wastewater Treatment Plant for Water Authority of Jordan** (Nov 2019).

This project was funded by the USAID and was awarded by Tetra Tech International Inc. to the Water, Energy, and Environment Center at the University of Jordan for a total amount of USD 17,800. The main goal of this project was to design and implement a Level 1 Wastewater Laboratory Technicians training course to 14 operators and technicians from the Water Authority of Jordan, Yarmouk Water Company, Miyahuna Company, and Aqaba Water Company. The 5-day training course was conducted at the University of Jordan in Nov 2019. Dr. Husam Abu Hajar was the project coordinator and was responsible for the preparation of the technical and financial proposals, preparing the training material, managing and conducting the training activities, and drafting the inception and final reports.

Computer Software

- EnviroSim BioWin wastewater treatment process simulator.
- IBM SPSS statistical analysis software.
- USGS PHREEQC water quality modeling software.
- Microsoft office.
- WaterCAD.
- SewerCAD.
- EPANET.
- Autocad.
- Basic knowledge of MATLAB, C++, HEC-RAS, ABAQUS, and SuperPro.

Publications

Abu Hajar, H. A., Tweissi, A., Abu Hajar, Y., Al-Weshah, R., Shatanawi, K., Imam, R., Murad, Y., Abu Hajar, M. (2020). Assessment of the municipal solid waste management sector development in Jordan towards green growth by sustainability window Analysis. *J Clean Prod*, 258, 120539.

Murad, Y., Abdel-Jabar, H., Diab, A., **Abu Hajar, H. A.** (2020). Exterior RC joints subjected to monotonic and cyclic loading. *Eng Computation*.

- Murad, Y., AL-Bodour, W., **Abu Hajar, H. A.** (2019). Cyclic behavior of RC beam-column joints made with sustainable concrete. *Int Rev Civ Eng*, 10(6), 301-311.
- Al Smadi, B., Al Oran, E., **Abu Hajar, H. A.** (2019). Adsorption-desorption of cypermethrin and chlorfenapyr on Jordanian soils. *Arab J Geosci*, 12(15), 465.
- Murad, Y., Imam, R., **Abu Hajar, H. A.**, Habeh, D., Hammad, A., Shawash, Z. (2019). Predictive compressive strength models for green concrete. *Int J Struct Integ.*
- Abu Hajar, H. A.**, Murad, Y. Z., Shatanawi, K. M., Al-Smadi, B. M., & Abu Hajar, Y. A. (2019). Drought assessment and monitoring in Jordan using the standardized precipitation index. *Arab J Geosci*, 12(14), 417.
- Al Smadi, B., Al-Hayek, W., **Abu Hajar, H. A.** (2019). Treatment of Amman slaughterhouse wastewater by anaerobic baffled reactor. *Int J Civ Eng.*
- Liu, S., **Abu Hajar, H. A.**, Riefler, G., & Stuart, B. J. (2018). Lipid extraction from *Spirulina* sp. and *Schizochytrium* sp. using supercritical CO₂ with methanol. *BioMed Res Int.*
- Liu, S., **Abu Hajar, H. A.**, Riefler, G., & Stuart, B. J. (2018). Investigation of electrolytic flocculation for microalga *Scenedesmus* sp. using aluminum and graphite electrodes. *RSC Advances*, 8(68), 38808-38817.
- Abu Hajar, H. A.** (2018). Potential of algal biodiesel production in Jordan. *Int J App Eng Res*, 13(14), 11565-11571.
- Abu Hajar, H. A.**, Riefler, R. G., & Stuart, B. J. (2017). Cultivation of the microalga *Neochloris oleoabundans* for biofuels production and other industrial applications (a review). *Appl Biochem Microbiol*, 53(6), 640-653.
- Abu Hajar, H. A.**, Riefler, R. G., & Stuart, B. J. (2017). Cultivation of *Scenedesmus dimorphus* using anaerobic digestate as a nutrient medium. *Bioproc Biosyst Eng*, 40(8), 1197-1207.
- Abu Hajar, H. A.**, Riefler, R. G., & Stuart, B. J. (2016). Anaerobic digestate as a nutrient medium for the growth of the green microalga *Neochloris oleoabundans*. *Environ Eng Res*, 21(3), 265-275.
- Abu Hajar, H.** & Riefler, R. (2013). Selective precipitation of aluminum and iron from acid mine drainage. In *National Association of Abandoned Mine Land Programs Conference*. Daniels, WV.
- Goetz, E., **Abu Hajar, H. A.**, & Riefler, R. (2013). Recovering metals from acid mine drainage through electrolysis: A pilot study. In *World Mining Conference*. Montreal, Canada.

Awards and Honors

- 1st place winner in Ohio University Expo Idea Pitch Competition, Apr, 2016
Presentation title: “*Organic Waste Management and Energy Recovery in Northern Jordan*”.
- 1st place winner in Graduate Students Competition/ Institute of Biological Engineering Conference, Lexington, KY, Mar, 2014

Presentation title: “*Algae-based Sustainable House*”.

- 2nd place winner in Ohio University Expo Idea Pitch Competition, Apr, 2013

Presentation title: “*Recovering Metals from Acid Mine Drainage through Electrolysis: A Pilot Study*”.

- 2nd place winner in Ohio University International Students Symposium, Feb, 2013

Presentation title: “*Selective Precipitation of Aluminum and Iron in Acid Mine Drainage*”.

- 1st place winner in Ohio University Expo Poster Competition/ Civil Engineering, May, 2012

Presentation title: “*Exfiltration Trenches for Post Construction Storm Water Management for Linear Transportation Projects: Field Study of Suspended Materials*”.

- 1st place winner in Ohio University Expo Poster Competition/ Civil Engineering, May, 2011

Presentation title: “*Exfiltration Trench for Storm Water Highway Runoff Treatment*”.

External Affiliations and Community Service

Jordanian Engineers Association (JEA): Feb, 2009 – present

- Active volunteer member in a number of committees including the Infrastructure Committee, the Environmental Engineering Consultancy Head Interviews Committee, Water Resources and Environmental Engineering Committee, and Environmental Engineering Infrastructure Projects Committee.
- Presented a training workshop to an audience of 75 engineers and non-engineers on “Solid Waste Management in Jordan” on February 25, 2019.
- Participated in the organization of workshops and training sessions in the infrastructure, water resources, and environmental engineering fields within the Jordanian context.

A member of the organizing committee for the Second Balq’a International Engineering Conference (BIEC 2019).

A member of the organizing committee for the 5th IWA International Symposium on Water and Wastewater Technologies in Ancient Civilizations (2019).