



CURRICULUM VITAE

DR. RANA HAJ KHALIL

JORDAN

Profile:

Dr. Rana Haj Khalil is an Assistant Professor of Mechanical Engineering. She combines **ten years** of academic research and teaching experience in Mechanical and Energy Engineering Departments as an Assistant Professor.

She has twenty one years of experience in the academic field starting from a research assistant at Kuwait University for one year, five years as scientific assistant at Applied Science University. She worked as a lecturer at Philadelphia University for eight years, followed by Assistant Professor at Philadelphia University for five years. She worked for two years as an Assistant professor at the Energy Engineering Department at Zarqa University. Finally, she joined Jadara University at February, 2022, at Renewable Energy Engineering Department.

Beside her academic experience, she worked for five years at different engineering companies as a mechanical engineer.

Dr. Haj Khalil received her Ph.D. in Mechanical Engineering degree in 2010, from the University of Jordan. She was the first Jordanian Woman who got her MSc. in Mechanical Engineering degree in 1995, from the University of Jordan.

Her Ph.D. research was executed at the University of Nurnberg-Erlangen in Germany by a Grant from the DFG in Germany that enabled her to conduct the Ph.D. research work in Combustion. This opportunity exposed to an excellent experience in research. She used state of the art techniques and instrumentation; this really widened her experience in the field of combustion.

Dr. Haj Khalil PH.D. Dissertation investigates theoretically and experimentally the effect of electric field on the reduction of certain pollutants that are emitted during the combustion process on methane air mixture in gas turbines under both high pressure and inlet velocity conditions.

She uses ANSYS FLUENT tool for CFD application to achieve this by a simulation process.

Dr. Haj Khalil is highly motivated and independent. She is able to work efficiently and effectively on her own. She appreciated feedback and enjoys collaboration with colleagues. Additionally, Dr. Haj Khalil holds her work to a high standard, both, technically and ethically.

Dr. Haj Khalil has six published paper works at well-known journals. She went to Germany for two scientific visits at 2007 and 2010.

Education

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| Ph.D. | Mechanical Engineering. University of Jordan, Amman, Jordan (2009). Dissertation entitled of “Reduction of Pollutants Emitted from Gas Turbine under High Pressure and High Velocity using an Electric Field.”
Rank: Very Good |
| M.Sc. | Mechanical Engineering. University of Jordan, Amman, Jordan (1995). Dissertation entitled of “Simulation and optimization of electric power generation by solar ponds in Jordan”.
Rank: Very Good |
| B.Sc. | Mechanical Engineering. Kuwait University, Kuwait (1989). Final Year Project Title entitled of “Energy conservation in buildings by using (DOE-2 program).
Rank: Very Good |

Work Experience:

February, 2022 till now	Assistant Professor at Renewable Energy Engineering Department, Jadara University, Irbid, Jordan.
February, 2019 Till 10/12/2019	Committee Decision of a feasibility study for establishing Mechanical Engineering department in the faculty of Engineering at Petra University. Preparing for the Study plan, list of Laboratory equipment's, list of books for the compulsory & elective courses.
April, 2017 – February, 2019	Assistant Professor at the Energy Engineering Department, Zarqa University. Al-Zarqa, Jordan. Taught several courses.
March, 2010 – August, 2015	Assistant Professor at the Mechanical Engineering Department, Philadelphia University. Jerash, Jordan. Taught several courses, supervising graduation projects and participating in departmental committees.
2003 - 2010	Lecturer at the Mechanical Engineering Department, Philadelphia University. Jerash, Jordan. Taught several courses, supervising graduation projects and participating in departmental committees.
2002-2003	Part time Lecturer at the Mechanical Engineering Department, at The University of Jordan & Philadelphia University. Taught Engineering Drawing course (Manual & AutoCAD).
2000-2002	Project Assistant at Training and Employment Support Project (TESP), Funded by the World Bank at the Ministry of Labor. Amman, Jordan.

1995 – 2000	<p>Scientific Assistant at the Mechanical Engineering Department, Applied Science University. Amman, Jordan.</p> <p>Member at the Technical committee for reception of equipment's for establishing the following Laboratories: Heat Transfer, Fluid Mechanics and Renewable Energy Center.</p> <p>Preparing Manuals for the above laboratories.</p> <p>Teaching and conducting experiments for the students.</p>
1994 – 1995	<p>Mechanical Engineer at ALPHCAN Company. Amman, Jordan.</p>
1992 – 1993	<p>Mechanical Engineer at PETRA – HITACHI Industries. Amman, Jordan.</p>
1990-1991	<p>Research Assistant for Feasibility Studies at Jawad Anani Centre for Economic and Technological Studies. Amman, Jordan.</p>
1989 –1990	<p>Research Assistant at Mechanical Engineering Department, Kuwait University, Kuwait.</p> <p>Using DOE-2 computer program for building Energy analysis that can predict energy use and cost for all types of buildings.</p>

Research Interests

- Renewable Energy.
- Combustion and environmental pollution.
- Alternative fuels.

Courses Taught

1. **Design of Solar Energy Systems & Applications. (Jadara University)**
2. **Special Topics on Wind Energy. (Jadara University)**
3. **Heat Transfer. (Jadara University)**
4. **Materials Science. (Jadara University)**
5. **Fluid Mechanics. (Jadara University)**
6. **Design of Machinery Elements. (Jadara University)**
7. **Thermodynamics. (Jadara University)**
8. **Energy Production. (Jadara University)**
9. **Renewable Energy Sources Laboratory. (Jadara University)**
10. **Strength of Materials Laboratory. (Jadara University)**
11. **Thermal Laboratory. (Jadara University)**
12. Renewable Energy III: Solar Energy. (Zarqa University)
13. Solar Energy Laboratory. (Zarqa University)
14. Renewable Energy II: Wind Energy. (Zarqa University)
15. Energy-Efficient Design. (Zarqa University)
16. Thermal Power Plants Laboratory. (Zarqa University)
17. Simulation and Prediction. (Zarqa University)
18. Simulation Laboratory. (Zarqa University)
19. Operations Research. (Zarqa University)
20. Thermal-Fluid Sciences. (Philadelphia University)
21. Internal Combustion Engines. (Philadelphia University)
22. Internal Combustion Engines Laboratory. (Philadelphia University)
23. Turbo machinery. (Philadelphia University)
24. Engineering Drawings. (The University of Jordan and Philadelphia University)
25. Mechanical Engineering Drawing. (Philadelphia University)
26. Thermodynamics I. (Philadelphia University)
27. Thermodynamics Laboratory. (Applied Science University)
28. Heat Transfer 1. (Philadelphia University)
29. Heat Transfer Laboratory. (Applied Science University)
30. Engineering Measurements and Instrumentation. (Philadelphia University)
31. Design of Sanitary Systems. (Philadelphia University)
32. Engineering Mechanics (Statics). (Philadelphia University)
33. Engineering Mechanics (Statics and Dynamics). (Philadelphia University)
34. Fluid Mechanics Laboratory. (Applied Science University)

35. Engineering Workshops. (Zarqa University)
36. Renewable Energy Center laboratory. (Applied Science University)
37. AutoCAD Laboratory. (Applied Science University and Philadelphia University)
38. Mechanics of Materials Laboratory. (Applied Science University and Zarqa University)

Published Research:

1. R. A. Haj khalil, B.A. Jubran and N.M. Faqir **“Optimization of Solar Pond Electrical Power Generation System”**. International Journal of Energy Conversion and Management, Volume 38, Number 8, pp. 787-798, May 1997.
2. R. A. Haj khalil, M. A. Hamdan and J. A. Yamin **“The Effect of Locally Manufactured Gasoline Fuels on the Performance of an Engine and on the Environment”**. The Sixth Jordanian International Mechanical Engineering Conference. Oct. 22-24 2007. Amman—Jordan
3. M. A. Hamdan and R. A. Haj Khalil **“Simulation of compression engine powered by biofuels”**. Energy Conversion and Management, 51, pp. 1714-1718 (2010).
4. R. Haj Khalil, A. Sakhrieh, M. Hamdan and J. Asfar **"Effect of Pressure and Inlet Velocity on the Adiabatic Flame Temperature of a Methane-Air Flame"**. Jordan Journal of Mechanical and Industrial Engineering, Hashemite University, Volume 4, Number 1, pp. 21-28 (2010).
5. M. A. Hamdan, S. D. Rossides and R. Haj Khalil **“Thermal Energy Storage using Thermo-Chemical Heat Pump”**. Energy Conversion and management, Volume 65, January 2013, Pages 721-724
6. **M. A. Hamdan, R. A. Haj Khalil, and E. A. M Abdelhafez** **“Comparison of Neural Network Models in the Estimation of the Performance of Solar Still Under Jordanian Climate”** journal of Clean Energy Technologies, Vol. 1, No. 3, July 2013

7. M. A. Hamdan, E. A. Abdelhafez, A. M. Hamdan, and R.A. Haj Khalil **“Heat Transfer Analysis of a Flat-Plate Solar Air Collector by Using Artificial Neural Network”**, Journal of Infrastructure Systems, Volume 22 Issue 4 - December 2016.
7. Mohammad Hamdan, Rana Haj Khalil, Eman Abdelhafez, Salman Ajib **“The Effect of Nanomaterial Type on Water Disinfection Using Data Mining”**, Journal of Ecological Engineering, 2023, 24(4), 244–251.
8. **Rana Abd El-Hamied Haj Khalil, “Comparative Analysis and Assessment of Economic Profitability of a Hybrid Renewable Energy Framework via HOMER Optimization in Jordan”, International Journal of Heat and Technology Vol. 42, No. 3, June, 2024, pp. 933-948.**
9. **Rana Abd El-Hamied Haj Khalil^{1*}, Suleiman MJ. Enjadat “Predictive Modeling of Hourly Air Temperature Based on Atmospheric Conditions of Karak in Jordan “. International Journal of Sustainable Development and Planning. International Journal of Sustainable Development and Planning. Vol. 19, No. 9, September, 2024, pp. 3679-3688**

Professional Activities

1. Member of the steering committee for the "Global Conference on Renewables and Energy Efficiency for the Desert Regions, GCREEDER 2013", Amman, Jordan.
2. Member of the steering committee for the "Global Conference on Renewables and Energy Efficiency for the Desert Regions, GCREEDER 2011", Amman, Jordan.
3. Scientific Visiting at Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen – Germany .Summer 2007 and 2010.
4. Member in Jordanian Scientific Research Association, since 2010.
5. Member at Jordanian Engineers Association, since 1989.

Short Courses Attended

Participating in:

1. **The First SAOT Academy** held at Friedrich-Alexander-Universität Erlangen-Nürnberg .Erlangen–Germany. Summer (2007).
2. A course on "Introduction to Oracle RDBMS Ver. 8" held at International Training and Consulting Center, Amman, Jordan (March, 2000).
3. A course on "Java programming for developer" held at International Training and Consulting Center, Amman, Jordan (February, 2000).
4. A course on "Designing Heating systems" held at Jordan Engineers Association, Amman, Jordan (July, 1993).

Continue
Short
Courses
Attended

5. A course on "Applying the Jordanian Codes in Heating Systems, Thermal Insulation and Sanitary Systems" held at Jordan Engineers Association, Amman, Jordan (April, 1993).
6. A course on "AUTO CAD Graphics System" held at Jordan Electricity Authority, Amman, Jordan (January, 1992).
7. A course on (Energy Conservation in Refrigeration and Air Conditioning Systems, Jordan Engineers Association, Amman, Jordan, (April, 1992)

