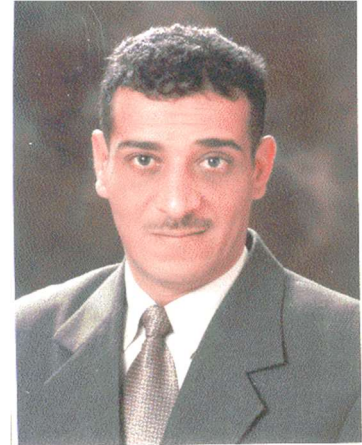


# PROFESSOR OF MECHANICAL ENGINEERING

(THERMO-FLUID AND  
ENERGY)



DR. HAMZEH DUWAIRI

## Personal Details:

**Name:** Dr. Hamzeh Mustafa Mohammad Duwairi

**Birthdate:** 18, March, 1969  
Kitem, Irbid, Jordan

**Nationality:** Jordanian

**Address:** Mechanical Engineering Department,  
Faculty of Engineering & Technology,  
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**ORCID:** <https://orcid.org/0000-0003-4400-6044>

**Scopus:** Author ID: 6602827161

## Education:

(1) 1997-2000 Hamburg University of Technology (TUHH),  
GERMANY.

PhD. Degree in Fluid Mechanics & Heat Transfer, the title of my thesis is:  
**(Boundary Layer Analysis of Buoyancy-Pressure-Driven Liquid Film,  
Two-Phase Flow and Heat Transfer in a Capillary Porous Medium).**

(2) 1990-1992 Jordan University of Science & Technology (JUST), IRBID.  
M.Sc. Degree in Thermal Power, the title of my thesis is:

**( Non-Darcy Mixed Convection along Horizontal Wall in Saturated Porous Medium )**

(3) 1986-1990 Mosul University, IRAQ.

B.Sc. Degree in Mechanical Engineering, I was ranked the second out of 80 students.

### **Academic & Administrative Experience:**

(1) 2010-now Full professor at the University of Jordan

(2) 2011-2012 Chair of Mechanical Engineering Department.

(3) 2008-2010 Associate professor at the University of Jordan.

(4) 2007-2008 Sabbatical leave year in Mechatronics Engineering Department at German-Jordanian University in Amman.

(5) 2005-2007 Associate Professor at the University of Jordan.

(6) 2002-2003 Head of Energy & Environment center.

(7) 2000-2005 Assistant Professor at the University of Jordan.

(8) 1994-1997 Full Time Lecturer at the University of Jordan.

(9) 1993-1994 Mechanical Engineer in the Ministry of Energy & Minerals in the new & renewable energy resources department.

(10) 1992-1993 Designer & Supervisor for: potable, domestic, industrial and fire water networks, compressed air system, fuel oil system, drainage and sewage networks and HVAC systems with the METAL EXPORT COMPANY (Polish-British company).

(11) 1990-1992 Research & Teaching Assistant in Jordan University of Science & Technology (JUST).

## **Councils and Committees and Research Duties:**

- 1)- **Member of International Scientific Committee** of the 7th WSEAS International Conference on *CIRCUITS, SYSTEMS, ELECTRONICS, CONTROL & SIGNAL PROCESSING (CSECS'08)*,  
Puerto De La Cruz, Tenerife, Canary Islands, Spain, December 15-17, 2008.  
<http://www.wseas.org/conferences/2008/tenerife/csecs>
- 2)- **Member of International Scientific Committee** of the 13th WSEAS International Conference on *APPLIED MATHEMATICS (MATH'08)*,  
Puerto De La Cruz, Tenerife, Canary Islands, Spain, December 15-17, 2008.  
<http://www.wseas.org/conferences/2008/tenerife/MATH.pdf/>
- 3)- **Member of International Scientific Committee** of the 2nd WSEAS International Conference on *COMPUTATIONAL CHEMISTRY (COMPUCHEM'08)*,  
Puerto De La Cruz, Canary Islands, Spain, December 15-17, 2008.  
<http://www.wseas.org/conferences/2008/tenerife/compuchem/>
- 4)- **Member of International Scientific Committee** of the 4th WSEAS International Conference on *HEAT and MASS TRANSFER (HMT'07)*,  
Gold Coast, Queensland, Australia, January 17-19, 2007  
<http://www.wseas.org/conferences/2007/australia/hmt>
- 5)- **Member of International Scientific Committee** of the 4th IASME / WSEAS International Conference on *Fluid Mechanics and Aerodynamics*,  
Elounda, Agios Nikolaos, Crete Island, Greece, August 21-23, 2006.  
<http://www.wseas.org/conferences/2006/crete/fluid>
- 6)- **Member of International Scientific Committee** of the 4<sup>th</sup> IASME/WSEAS International Conference on *Heat Transfer, Thermal Engineering and Environment*,  
21-23 August, Crete Island, Greece, 2006.  
<http://www.worldses.org/conferences/2006/>
- 7)- **Member of International Scientific Committee** of the 2006 IASME/WSEAS International Conference on *Heat and Mass Transfer (HMT 06)*,  
18-20 January, Miami, Florida, USA, 2006.  
<http://www.worldses.org/conferences/2006/>
- 8)- **Reviewer** of Different International Journals, (*Journal of Porous Media, Int. J. Heat & Technology, Heat and Mass Transfer, Int. J. Numerical Methods Heat Fluid flow, Chemical Engineering Communication*).
- 9)- **Reviewer** of Different Local and International Conferences.
- 10)- **Guest Editor** of IASME Transactions, Issue 8, Vol 2, October 2005.

11)- **Session Chairman**, session title: *Convection Heat Transfer: Modeling & Experiment within 3<sup>rd</sup> IASME/WSEAS Conference*,  
<http://www.worldses.org/conferences/2005/corfu/heat/index.html>

12)- **Session Organizer** within 3<sup>rd</sup> IASME/WSEAS Conference **Entitled**: *Convection Heat Transfer Modeling and Experiment*, **Topics**: *Fundamentals of Convection Heat Transfer, Thermal Radiation-Convection Interaction, MHD-Convection Heat Transfer, Convection Heat Transfer during Manufacturing Process, Experimental Heat Transfer, Convection Heat Transfer With Change in Phase, Convection Heat Transfer during Combustion Process, Application of CFD on Convection Heat Transfer Problems.*

13)- **Member of International Scientific Committee** of the 3<sup>rd</sup> IASME/WSEAS Conference of Heat Transfer, Thermal Engineering and Environment, 20-22 August, Corfu Island, Greece, 2005.  
<http://www.worldses.org/conferences/2005/corfu/heat/index.html>

14)- **Member of International Scientific Committee** of The International Conference for Advanced Mechanical Engineering, (LMMC/DGM), 30 Nov.-02 Dec., Algiers, Algeria, 2004.  
<http://www.umbb.dz>

15)- **Member of International Scientific Committee** of 1st AIGE-IIETA International Conference and 10th AIGE Conference, June 9 and 10, 2016 Napoli, Italy.

16)-**Member of International Scientific Committee** of 3rd AIGE/IIETA International Conference and 12th AIGE 2018 Conference on "Energy Conversion, Management, Recovery, Saving, Storage and Renewable Systems", 14-16 June, Reggio, Italy.

17)- **Member of International Scientific Committee** The 4th AIGE/IIETA International Conference and 13th AIGE 2019 Conference on "Energy Conversion, Management, Recovery, Saving, Storage and Renewable Systems", 13-14 June, Matera, Italy.

18)- **Member of International Scientific Committee** of The 5th AIGE/IIETA International Conference and 14th AIGE 2020 Conference on "Energy Conversion, Management, Recovery, Saving, Storage and Renewable Systems", 13-14 June, Italy.

19)- Associate Editor of the *Mathematical Modeling of Engineering Problems Journal*.

20)- **Promotion Committee** either internal or external University.

21)- **Organization and Participation** of Several Engineering Workshops, Seminars, Meetings in various fields.

22)- **Member** of Several Tender National Committees.

23)- **Chairman and Member** of Several Tender Committees inside Department, Faculty and University.

24)- **Post Graduate** Department Committee (2005-2007).

25)- **Mechanical Engineering Council** (2000-present).

26)- **Examiner** of Large Number of MSc. Thesis Inside and Outside University.

27)- Jordanian ministry of Education books preparation and supervision from-2000-2020.

### **M. Sc. And PhD. Thesis Supervision:**

1)- *MHD-Mixed Convection Heat Transfer from Radiant Vertical Cylinder.*

(M. Sc. Thesis), January 2004.

2)- *MHD-Conjugate Mixed Convection Over a Vertical Hollow Cylinder Embedded in a Saturated Porous Medium.*

(M. Sc. Thesis), April 2005.

3)- *MHD-Convection Heat Transfer Over a Non-Isothermal Ellipse Embedded in a Fluid-Saturated Porous Medium.*

(M. Sc. Thesis), August 2006.

4)- *Mixed Convection Heat Transfer for a Non-Newtonian Fluid Around a Cylinder or Sphere Embedded in Saturated Porous Media.*

(M. Sc. Thesis), July 2007.

5)- *Modeling and Design of an AC Magnetohydrodynamic  
Micropump Using Lorentz Force.*

*(PhD. Thesis), August 2007.*

6)- *MHD Natural Convection in Porous Media-filled Enclosures.*

*(M. Sc. Thesis), November 2008.*

7)- *MHD Natural Convection in Porous Media-Filled Isoflux  
Enclosures.*

*(M. Sc. Thesis), October 2010.*

8)- *Permeability Effect on the Propagation of Sound Waves in a  
Saturated Porous Media.*

*(M. Sc. Thesis), November 2010.*

9)- *Forchheimer, Non-Boussinesq Natural Convection in Porous  
Media Filled Enclosure.*

*(M. Sc. Thesis), July 2012.*

10)- *Slip Velocity and Temperature Jump Effects on Convection From  
Vertical Surface Embedded in Saturated Porous Media.*

*(M. Sc. Thesis), November 2013.*

11)- *Stability of Horizontal Porous Layers Heated From Below Using  
Forchheimer's Model.*

*(M. Sc. Thesis), December 2013.*

12)- *Modeling and Design of Smoke Control System for Regular  
Large Atrium Installed in Mercantile Buildings in Jordan.*

*(M. Sc. Thesis), January 2014.*

13)- *Analytical and Numerical Solutions of a Hyperbolic Heat Conduction Inside an Infinite slab.*

*(M. Sc. Thesis), August, 2014.*

14)- *Transient Thermal Dispersion Effects on Mixed Convection Heat Transfer in Porous Media with Viscous Dissipation.*

*(M. Sc. Thesis), October 2014.*

15)- *Boundary Layer Analysis of Slip Velocity and Temperature Jump Effects on a Fluid Saturated Porous Media.*

*(M. Sc. Thesis), December 2014.*

16)- *Brinkman Effects on Sound Wave Propagation in a Fluid Saturated Porous Media*

*(M. Sc. Thesis), July 2015.*

17)- *Modeling of Liquid Film Condensation in Saturated Porous Medium Using Forchheimer's Model.*

*(M. Sc. Thesis), August 2015.*

18)- *A new approach for Intermittent Unsteady Heating Load Calculation for a Jordanian Building.*

*(M. Sc. Thesis), August 2015.*

19)- *Modeling of Fluid Flow and Heat Transfer inside a Saturated Porous Conduit at Constant Surface Heat Flux.*

*(M. Sc. Thesis), August 2017.*

20)- *Passive cooling of photovoltaic (PV) modules using corrugated surfaces technology.*

*(M. Sc. Thesis), April 2019.*

21)- *The Effects of Fluctuating air Streams on the Output of a Wind Turbine.*

*(M. Sc. Thesis), April 2019.*

22)- *Solar Energy Storage Using Non - Newtonian Fluid in a Saturated Porous Media.*

*(M. Sc. Thesis), April 2019.*

23)- *The Effects of Laminar and Turbulent Fluctuating Pressure Gradients on a Wind Turbine*

*(M. Sc. Thesis), July 2019.*

24)-*Turbulent Passive Cooling of Photovoltaic (PV) Modules Using corrugated Surfaces.*

*(M. Sc. Thesis), July 2019.*

25)- *The Effects of Turbulent Fluctuating air Streams on the Output of a Wind Turbine.*

*(M. Sc. Thesis), July 2019.*

26)- *Strength analysis of passive cooled corrugated photo voltaic modules.*

*(M. Sc. Thesis), December 2019.*

27)- *Solar Energy Storage Using non-Newtonian Fluid in a Circular Conduit Filled with Saturated Porous Media.*

*(M. Sc. Thesis), December 2019.*

28)- *The Effects of Fluctuating Pressure Gradients and Corrugated Surfaces on a Wind Turbine Output.*

*(M. Sc. Thesis), December 2019.*



29)- *The effect of dusty air stream on the output of wind turbine.*

*(M. Sc. Thesis), June 2020.*

30)- *Modeling and optimization of a photo voltaic modules using corrugated surfaces.*

*(M. Sc. Thesis), June 2020.*

31)- *Soiling Effects on Corrugated Photovoltaic Modules' Power Output and Efficiency*

*(M. Sc. Thesis), June 2020.*

32)- *The Effects of Fluctuating Dusty Air Streams on the Output of a Wind Turbine*

*(M. Sc. Thesis), June 2020.*

33)- *Solar Energy Storage Using Nano-fluid in a Saturated Porous Media.*

*(M. Sc. Thesis), October 2020.*

34)- *Solar Energy Storage Using Parabolic Trough Filled with Saturated Porous Media.*

*(M. Sc. Thesis), October 2020.*

35)- *Experimental Investigation of Corrugated Photovoltaic Modules Cooling.*

*(M. Sc. Thesis), June 2021.*

36)- *Modeling of Tidal Energy Extraction Using Wavy Surface Hydrodynamics.*

*(M. Sc. Thesis), August 2021.*

37)- *Modelling of Turbulence Hydrodynamics on Bladeless Wind Turbine Energy Extraction.*

*(M. Sc. Thesis), December 2021.*

*38)-Modelling of Turbulent Tidal Energy Using Ocean Wavy Surfaces Hydrodynamics.*

*(M. Sc. Thesis), December 2021.*

*39)-Modelling of Bladeless Wind Turbine Energy Extraction.*

*(M. Sc. Thesis), January 2022.*

*40)- Thermal Radiation-Convection Interaction Effects on Corrugated Photovoltaic' Modules.*

*(M. Sc. Thesis), January 2022.*

*41)- Enhancement of the Output Power and Efficiency of Finned Photovoltaic Modules.*

*(M. Sc. Thesis), August 2021*

*42)- Enhancement of Heat Transfer Rates by Using Nano Fluid-Filled Porous Conduit as an Automobile Radiator.*

*(M. Sc. Thesis), January 2022.*

*43)- The effect of dusty wind hydrodynamics on bladeless wind turbines.*

*(M. Sc. Thesis), August 2022.*

*44)- Wind-Gravity Effects on the Soiling of Photovoltaic Modules and performance.*

*(M. Sc. Thesis), August 2022.*

*45)- Modeling of Tidal Energy Extraction with Oscillating Wind Flow Hydrodynamics.*

*(M. Sc. Thesis), August 2022.*

*46)- Modeling of Soiling Effects on the Output of a Wind Turbine with Oscillating Pressure.*

*(M. Sc. Thesis), August 2022.*

*47)- The effect of dusty wind hydrodynamics on bladeless Wind Turbine.*

*(M. Sc. Thesis), August 2022.*

*48)- Wind-Gravity Effects on the Soiling of Photovoltaic Modules and Performance.*

*(M. Sc. Thesis), January 2023.*

*49)- Enhancing vacuum tubes performance using Darcian natural convection in saturated porous media*

*(M. Sc. Thesis), January 2023.*

*50)- Enhancing photovoltaic modules efficiency using thermal and electrical analysis.*

*(M. Sc. Thesis), May 2024.*

*51)- Solar energy storage using micro polar fluid in a saturated Porous media*

*(M. Sc. Thesis), August 2024.*

*52)- Modeling of thermal energy storage using phase change materials inside saturated porous medium*

*(M. Sc. Thesis), August 2024.*

*53)- Solar Energy Storage Enhancement Using Micro Polar Fluids Inside Vacuum Tubes*

*(M. Sc. Thesis), August 2024.*

*54)- Mathematical model of Metal-hydride storage for fuel cell usage*

*(M. Sc. Thesis), now.*

55)- *Enhancing vacuum tubes performance using Non-Newtonian - natural convection in saturated porous media*  
(M. Sc. Thesis), August 2024.

56)- *Solar Energy Storage Enhancement Using Williamson Fluids.*  
(M. Sc. Thesis), now.

57)- *Cylindrical vacuum tubes performance enhancement using williamson fluids*  
(M. Sc. Thesis), now.

### **Research Activities:**

- Renewable energy (solar, wind, tidal, photovoltaic cells and geothermal).
- Convection heat transfer in plain media and porous media.
- Liquid film condensation.
- Two-phase flows.
- Surface tension driven flows.
- MHD heat transfer problems.
- Thermal radiation-Convection heat transfer interaction.
- Analytical solutions for heat and mass transfer problems.
- Numerical solutions for heat and fluid flow problems.
- Magnetic and viscous dissipation effects on Blood flow.
- Heat transfer effects during manufacturing process.
- Heat transfer during combustion process.
- Heat transfer during change in phase.
- Application of CFD in heat transfer problems.
- MEMS Fluid Mechanics and Heat Transfer Applications.
  
- Ac and Dc MHD micro pumps using fluctuating Lorentz forces.
  
- Thermophoresis-convection interaction for fluid flowing in a saturated porous media.
- Sound waves propagation in fluids.

### **Teaching Activities:**

#### **A. Elementary Courses:**

- (1) Engineering Drawing and Descriptive Geometry Course.

- (2) Auto Computer Aided Drafting (ACAD).
- (3) Engineering Statics.
- (4) Fluid Mechanics I.
- (5) Fluid Mechanics II.
- (6) Fluid Mechanics (for Industrial Engineering.)
- (7) Fluid Mechanics laboratory.
- (8) Heat Transfer I.
- (9) Heat Transfer II.
- (10) Thermal Fluid Sciences (for Mechatronics Engineering)
- (11) Combustion Laboratory.
- (12) Thermodynamics I.
- (13) Thermodynamics II.
- (14) Energy Conversion Principles.
- (15) Hydraulic and Pneumatic systems.
- (16) Sanitary
- (17) Selected Topics in Mechanical Engineering.
- (18) Thermodynamic Laboratory.
- (19) Heat Transfer Laboratory.
- (20) Thermal Laboratory.
- (21) HVAC Systems.
- (22) HVAC II
- (23) Structural Design for Fire and Life Safety.
- (24) Design of Fire Protection systems.
- (25) Passive fire Protection I.
- (26) Passive fire protection II.
- (27) Active Fire Protection I.
- (28) Active fire protection II.
- (29) Fire Modeling and Control.
- (30) Computer Applications (MATLAB)
- (31) Engineering Programming.
- (32) Graduation Project I.
- (33) Graduation Project II.

**B. Advanced Courses:**

- (34) Advanced Fluid Mechanics (M. Sc. course).
- (35) Viscous Fluid Flow (PhD. course).
- (36) Computational Fluid Dynamics (CFD) (PhD. course).
- (37) Research Methodology (PhD. course).
- (38) Advanced Heat Transfer (M. Sc. course).
- (39) Convection Heat Transfer (PhD. course).
- (40) Conduction Heat transfer (PhD. Course).
- (41) Selected Topics in Mechanical Engineering.
- (42) M.Sc. Thesis supervision.
- (43) PhD. Thesis supervision.
- (44) Energy Efficiency

- (45) Selected Topics in Renewable Energy.
- (46) Design of Renewable Energy Systems.

### Research Grants:

- 1)- Grant # 45/2001 “Surface Tension Driven flow From Vertical Cylinder Embedded in Saturated Porous Medium” from the Deanship of Scientific Research at The University of Jordan.
- 2)- Grant # 56/2003 “MHD- Rayleigh Flow From Radiate Vertical Porous Plate With Constant Surface Temperature” from the Deanship of Scientific Research at The University of Jordan.

### Honors and Prizes:

- (1) Mosul University Honor Degree.
- (2) Jordan University of Science and Technology Assistantships (1990-1992).
- (3) DAAD (Deutsche Akademische Austausch Dienst-German Fellowship) for PhD. study (1997-2000).
- (4) DFG (Deutsche Forschungsgemeinschaft-German Fellowship) for research (Summer 2004).
- (5) Arab Fund for Economic and Social Development Distinguished Scholar Award for Academic Year 2007/2008.

### Publications in Specialized and Indexed Journals:

- (1)-T. K.Aldoss, M. A. Jarah and **H. M. Duwairi**, Wall Effects On Mixed Convection From Horizontal Surfaces With Variable Surface Heat Flux. *The Canadian Journal of Chemical Engineering*, Vol. 72, pp. 33-43, 1994.
- (2)- Z. Kodah and **H. M. Duwairi**, Inertia Effects On Mixed Convection For Vertical Plates With Variable Wall Temperature In Saturated Porous Media. *Heat and Mass Transfer*, vol. 31, pp. 333-338, 1996.

(3)- **H. M. Duwairi**, T. K. Aldoss and M. A. Jarah, Nonsimilarity Solutions for Non-Darcy Mixed Convection from Horizontal Surfaces in a Porous Medium. *Heat Mass Transfer*, vol. 33, pp. 149-156, 1997.

(4)- **H. M. Duwairi**, Boundary Layer Analysis of Buoyancy-Pressure-Driven Liquid Film, Two-Phase Flow and Heat Transfer in a Capillary Porous Medium. *Fortschritt-Berichte VDI*, Reihe 3, Verfahrenstechnik, Nr. 653, 2000.

(5)-**H. M. Duwairi** and Rebhi A. Damseh, Magnetohydrodynamic Natural Convection Heat Transfer From Radiate Vertical Porous Surfaces. *Heat Mass Transfer*, vol. 40, pp. 787-792, 2004.

(6)- **H. M. Duwairi** and Rebhi A. Damseh , MHD-Buoyancy Aiding And Opposing Flows With Viscous Dissipation Effects From Radiate Vertical Surfaces. *The Canadian J. of Chemical Engineering*, vol. 82, no.3, pp. 613-618, 2004.

(7)- **H. M. Duwairi**, H. A. Al-Tahaineh and M. A. Alhusein, Dimensional Analysis Of Non-Convective Salt Gradient Solar Pond. *Int. J. of Heat and Technology*, vol. 22, no. 2, pp. 65-68, 2004.

(8)- **H. M. Duwairi** , Bourhan Tashtoush and Rebhi A. Damseh, On Heat Transfer Effects of a Viscous Fluid Squeezed and Extruded Between Two Parallel Plates. *Heat Mass Transfer*, vol. 41, no. 2, pp. 112-117, 2004.

(9)- **H. M. Duwairi** and R. M. Duwairi Thermal Radiation Effects on MHD-Rayleigh Flow With Constant Surface Heat Flux. *Heat Mass Transfer*, vol. 41, no. 1, pp. 51-57, 2004.

(10)- **H. M. Duwairi** and R. M. Duwairi, MHD-Natural Convection Heat Transfer in Unsteady Couette Flow of Gray Fluids. *Int. J. of Heat and Technology*, vol. 22, no. 2, pp. 103-107, 2004.

(11)-**H. M. Duwairi**, Viscous And Joule Heating Effects On MHD-Forced Convection Flow From Radiate Isothermal Porous Surfaces. *Int. J. of Numerical Methods for Heat and Fluid Flow*, vol. 15, no. 5, pp. 429-440, 2005.

(12)- M. Q. Al-Odat, Rebhi A. Damseh and **H . M. Duwairi**, Free Convection

of Radiative Fluid From Vertical Wavy Surfaces.

*Int. J. of Heat and Technology*, vol. 23, no. 1, pp. 73-80, 2005.

(13) Bourhan Tashtoush, **H. M. Duwairi** and A. Al-Salaymeh, Hydromagnetic Flow on A power Law Stretching Surface With Suction and Injection of Non-Newtonian Fluid.

*Int. J. of Heat and Technology*, vol. 23, no. 1, pp. 55-60, 2005.

(14)- Bourhan Tashtoush and **H. M. Duwairi**, Transient Mixed Convection With Internal Heat Generation and Oscillating Plate Temperature.

*Acta Mechanica*, vol. 174, pp. 185-199, 2005.

(15)- **H. M. Duwairi** and A. J. Chamkha, Transient Free Convection Flow of a Micropolar Fluid Over a Vertical Surface.

*Int. J. of Fluid Mechanics Research*, vol.32, no. 3, pp.255-268, 2005.

(16)- **H. M. Duwairi**, Radiation Effects on Mixed Convection over Non-Isothermal Cylinder and Sphere in Porous Media.

*Journal of Porous Media*, vol. 9, no. 3, pp. 251-259, 2006.

(17)- Rebhi A. Damseh, **H. M. Duwairi** and M. AL-Odat, Similarity Analysis of Magnetic Field and Thermal Radiation Effects on Forced Convection Flow.

*Turkish J. Eng. Env. Sci.*, vol. 30, pp. 83-89, 2006.

(18)- **H. M. Duwairi**, Rebhi. A. Damseh and Bourhan Tashtoush, Transient Non-Boussinesq MHD-Free Convection Flows Over a Vertical Surface.

*Int. J. Fluid Mechanics Research*, vol. 33, no. 2, pp.152-173, 2006.

(19)- **H. M. Duwairi** and Y. Al-Kablawi, MHD-Conjugate Mixed Convection Heat Transfer Over a Vertical Hollow Cylinder Embedded in a Porous Medium.

*Int. J. of Heat and Technology*, vol. 24, no. 1, pp. 123-128, 2006.

(20)- **H. M. Duwairi** and Mustafa Abdullah, Thermal and Flow Analysis of a Magneto-hydrodynamic Micropump.

*Microsystem Technologies*, vol. 13, no. 1, pp. 33-39, 2007.

(21)- **H. M. Duwairi**, Rebhi. A. Damseh and Bourhan Tashtoush, Transient Mixed Convection Along a Vertical Plate Embedded in Porous Media With Internal Heat generation Heat and Oscillating Plate Temperature.

*Chemical Eng. Comm.*, vol. 194, no. 11, pp. 1516-1530, 2007.

(22)- **H. M. Duwairi**, Osama Abu-Zeid and Rebhi. A. Damseh, Viscous and Joule Heating Effects over an Isothermal Cone in saturated Porous Media.



*Jordan Journal of Mechanical and Industrial Engineering*, Vo. 1, No. 2, pp. 115-120, 2007.

(23)- **H. M. Duwairi**, Isentropic Sound Waves Propagation in a Tube Filled with a Porous Media.  
*Int. J. Mechanics*, vol. 1, no. 2, pp. 33-38, 2007.

(24)- **Hamzeh M. Duwairi**, Non-Isentropic Sound Waves Propagation of a Stationary or Flowing Fluid in Porous Media Filled Enclosures.  
*WSEAS Transactions on Fluid Mechanics*, vol. 2, no. 4, pp.77-84, 2007.

(25)- M. S. Shawaqfah, Rebhi. A. Damseh, A. J. Chamkha, **H. M. Duwairi** and Moduar H. Zgoul, Forced Convection of Blasius Flow of "SECOND-GRADE" Visco-Elastic Fluid.  
*Int. J. of Heat and Technology*, vol. 25, no. 1, pp. 145-151, 2007.

(26)- Morad Al-Zubi and **H. M. Duwairi**, MHD Convection over non Isothermal Ellipse Embedded in Fluid Saturated Porous Medium.  
*Int. J. Heat and Technology*, vol. 25, no. 2, pp. 29-24, 2007.

(27)- Mustafa Abdullah and **H. M. Duwairi**, Analysis of Fluid Flow in a Magneto-Hydrodynamic Micro Pump.  
*Int. J. Heat and Technology*, vol. 25, no. 2, pp. 91-96, 2007.

(28)- I. M. Hammad and **H. M. Duwairi**, Mixed Convection Heat Transfer for a Non-Newtonian Fluid around a Cylinder or Sphere Embedded in Porous Media.  
*Int. J. Heat and Technology*, vol. 25, no. 2, pp. 97-102, 2007

(29)- **H. M. Duwairi** and Mustafa Abdullah, Numerical Computation of Fluid Flow in a Magnetohydrodynamic Micropump.  
*Turkish J. Eng. Env. Sci.*, vol. 32, pp. 1-5, 2008.

(30)- I. M. Al-Hamad, **H.M. Duwairi**, Effect of Heat Generation/Absorption on Heat transfer for a non-Newtonian Fluid.  
*Int. J. Heat and Technology*, vol. 26, no. 2, pp. 172-132, 2008.

(31)- **H. M. Duwairi** and Rebhi. A. Damseh, Effect of Thermophoresis Particle Deposition on Mixed Convection from Vertical Surfaces Embedded in Saturated Porous Medium.  
*Int. J. of Numerical Methods for Heat and Fluid Flow*, vol. 18, no. 2, pp. 202-216, 2008.

(32)- Mustafa Abdullah and **Hamzeh M. Duwairi**, Thermal and Flow Analysis of Two-Dimensional Fully Developed Flow in an AC Magneto-hydrodynamic Micropump.

*Microsystem Technologies*, vol. 14, no. 8, pp. 1117-1123, 2008.

(33)- Rebhi. A. Damseh, Anis A. Shatnawi, A. J. Chamkha and **H. M. Duwairi**, Transient Mixed Convection Flow of a Second-Grade Visco-Elastic Fluid Over Vertical Surfaces.

*Nonlinear Analysis: Modeling and Control*, vol. 13, no. 2, pp. 169-179, 2008.

(34)-Mustafa Abdullah and **Hamzeh M. Duwairi**, Numerical Computation of Two-dimensional flow in an AC Magneto hydrodynamic Micropump.

*Canadian J. of Physics*, vol. 86, no. 11, pp. 1321-1325, 2008.

(35)- Rebhi. A. Damseh and **H. M. Duwairi**, Thermophoresis Particle Deposition - Natural Convection Interaction from Vertical Permeable Surfaces Embedded in Porous Medium.

*J. porous Media*, vol. 12, no. 1, pp. 79-88, 2009.

(36)- **Hamzeh. M. Duwairi** and Hazim. M. Dwairi, On the Propagation of Sound Waves in a Cylindrical Tube Filled with a Porous Media.

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### **Publications in Refereed and Specialized Conferences:**

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*1<sup>st</sup> WSEAS International Conference on Computational Chemistry*, 19-31 December, 2007, Cairo, Egypt, 2007.

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### **Industrial Projects:**

(1)- I worked at Siegen University in Germany on a project considering designing and building an air/bag system (that works as hinders) to shut down gas power stations in cases of emergency. (Summer 2004).

(2)- Estimation and reducing electric power consumption and design of new transmit systems for Jordanian cutting saws. (Summer 2005).

(3)- Upgrading of Jordanian steel-building industry; where unused raw steels is melted in furnaces and then given the desired shape using rolling machines; this includes furnaces, chimneys and rolling machines redesign. (Summer 2006).

(4)- Using thrown iron oxides from steel building industry as fertilizer; this includes mixing materials and design of mechanical systems to treat these wasted materials. (Summer 2007).

(5)- Testing of thermal conductivity and heat flow calculations for United Emirates Metal Company for the recommendation of a new product for building in Jordanian local market. (2009).

(6)- Testing of thermal conductivity, heat flow calculations and fire resistance test for GRC Company for the recommendation of a new product for building in Jordanian local market (2010).

### **Membership in the Professional Societies:**

- Jordanian Engineers Association.
- Jordanian Society for Renewable Energy.