Tariq T. Darabseh, PhD

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EDUCATION

- Ph.D., Mechanical Engineering, *New Mexico State University*, Las Cruces, NM, May 2002, GPA: 4.0.
  Dissertation: *Dynamic Stability of Viscoelastic Columns Loaded by a Follower Force.*
- M.Sc., Mechanical Engineering*, Jordan University of Science and Technology (JUST),* Irbid, Jordan, August 1994.
  Thesis: *Analytical Solutions for Transient Fully Developed Free Convection in Open-Ended Concentric Porous Annuli.*
- B.Sc., Mechanical Engineering, *Jordan University of Science and Technology (JUST)*, Irbid, Jordan, February 1992.

EXPERIENCE

- (6/2023- present) Professor, Aeronautical and Mechanical Engineering Departments, Jordan University of Science and Technology, Jordan.
- (9/2022-present) Chairman of Aeronautical Engineering Department, Jordan University of Science and Technology, Jordan.
- (6/2012- 6/2023) Associate Professor, Aeronautical and Mechanical Engineering Departments, Jordan University of Science and Technology, Jordan.
- (8/2014- 8/2015) Associate Professor, Aeronautical Engineering Department, Higher Colleges of Technology, Al Ain, UAE.
- (8/2015- 8/2021) Associate Professor, Department of Mechanical and Aerospace Engineering, United Arab Emirates University, Al Ain, UAE.
- (8/2016- 8/2021) Graduate Program Coordinator, Department of Mechanical and Aerospace Engineering, United Arab Emirates University, Al Ain, UAE.
- (6/2012-9/2012) Chairman of Mechanical Engineering Department, Jordan University of Science and Technology, Jordan.
- (9/2010-9/2012) Chairman of Aeronautical Engineering Department, Jordan University of Science and Technology, Jordan.
- (9/2010-9/2012) Assistant Dean of Engineering, Jordan University of Science and Technology, Jordan.
- (9/2009- 6/2012) Assistant Professor, Aeronautical and Mechanical Engineering Departments, Jordan University of Science and Technology, Jordan.
- (9/2007- 9/2009) Deputy Director, and *Director of Linking with Industry Department*, Consultative Center for Science and Technology, Jordan University of Science and Technology.
- (9/2005- 9/2009) Assistant Professor, Mechanical Engineering Department, Jordan University of Science and Technology, Jordan.
- (9/2003- 9/2005) Assistant Professor, Mechanical Engineering Department, Hashemite University, Jordan.
- (8/2002- 7/2003) College Assistant Professor, Mechanical Engineering Department, New Mexico State University, USA.
- (8/1998- 8/2002) Teacher and Research Assistant, Mechanical Engineering Department, New Mexico State University.
- (4/1996- 8/1998) Instructor, Electronic Engineering Department, Princess Sumaya University (PSU) / Royal Scientific Society (RSS).
- (11/1995-4/1996) Consulting Engineer in Jordanian Consulting Engineer Co**.**

- (6/1995-11/1995) Mechanical Engineer at Jordan Ministry of Public Works & Housing.
- (9/1992-8/1994) Teacher & Research Assistant at Mechanical Engineering Department in Jordan University of Science and Technology.

AREAS OF EXPERTISE

- Dynamic Stability
- Flight Stability and Control
- Unmanned Aerial Vehicles
- Finite Elements Analysis
- Thermal Stresses
- Linear and Nonlinear Dynamics
- Aeroelasticity
- Energy Harvesting

COURSES TAUGHT

Undergraduate Courses:

Automatic Control
Introduction to Mechanical Engineering
Mechanical Engineering Problem Solving
Statics and Dynamics
Mechanical Vibrations
Machine Design
Finite Element Methods
Computer Aided Design
Engineering Analysis
Strength of Materials
Flight Mechanics and Dynamics
Instrumentation and Dynamic Systems Lab.
Aircraft Structures
Aircraft Stability and Control
Aircraft Sensors and Actuators
Aircraft Performance
Aeronautics Lab. I and II
Mechanics of Machines
Strength of Materials Lab.
Numerical Methods
Projects in Machine Design
Introduction to Mechatronics
Robotics

Graduate Courses:

Advanced Control Systems
Advanced Dynamics
Mechanical Vibrations
Finite Element Methods
Engineering Analysis
Continuum Mechanics

COMPUTER SKILLS

CAD Programs: AutoCAD, ProEngineer, SolidWorks.
FEA Programs: ProMechanica, Abaqus, Ansys, Msc.Marc
CFD Programs: Fluent, CFX.
Languages and Platforms: C, Pascal, Basic, FORTRAN, UNIX.
Other Programs: MathCad, MATLAB, Mathematica, SigmaPlot, Word, Excel.

HONORS AND AWARDS

- Klipsch Graduate Student Scholarship for the 1999-2000 academic year.

MASTER'S THESES SUPERVISED

1. "**Numerical solution of transient thermal stresses in a cylinder of functionally graded materials**" Master's Thesis – Mechanical Engineering Dept.-JUST, December 2006.

2. "**Vehicle dynamics stability and control with jackknifing prevention for articulated heavy trucks**" Master's Thesis – Mechanical Engineering Dept.- JUST, May 2007.

3. "**Numerical study of the thermomechanical behavior of functionally graded hollow circular cylinders**". Master's Thesis – Mechanical Engineering Dept.- JUST, January 2008.

4. "**Modeling and digital control of the contact force of the hard disk drive slider**". (Co-advisor) Master's Thesis – Mechanical Engineering Dept.- JUST, March 2008.

5. "**Exergy analysis of ceramic production in Jordan**". (Co-advisor) Master's Thesis – Mechanical Engineering Dept.- JUST, May 2008.

6. "**Three elements fuzzy control of water level in drum**". (Co-advisor) Master's Thesis – Mechanical Engineering Dept.- JUST, May 2008.

7. "**Generalized coupled thermoelasticity of functionally graded thick hollow cylinder with finite length**" Master's Thesis – Mechanical Engineering Dept.- JUST, August 2010.

8. "**Variable driving points controller for autonomous articulated vehicle navigating predefined path".** (Co-advisor) Master's Thesis – Mechanical Engineering Dept.- JUST, March 2011.

9. **"Modeling and control of two links of rigid-flexible manipulator"** Master's Thesis – Mechanical Engineering Dept.- JUST, May 2011.

10. "**Path optimization for an articulated vehicle**". (Co-advisor) Master's Thesis – Mechanical Engineering Dept.- JUST, May 2011.

11. "**Design and control of an electrostatic actuated micro-mirror device".** (Co-advisor) Master's Thesis **-** Mechanical Engineering Dept.- JUST, October 2011.

12. **"Control and design of four degree of freedom manipulator".** Master's Thesis **-** Mechanical Engineering Dept.- JUST, February 2012.

13. **"Dynamic stability of a viscoelastic cantilever tapered beam subjected to bending, torsion and transverse follower force".** (Co-advisor) Master's Thesis **-** Mechanical Engineering Dept.- JUST, December 2014.

14. **"Piezoelectric energy harvesting suspension system for a half car model: analytical and experimental study".** Master's Thesis **–** Department of Mechanical and Aerospace Engineering - UAEU, March 2020.

15. **"Bending-torsion flutter analysis of a viscoelastic tapered wing carrying an engine and subjected to a follower thrust force".** Master's Thesis **–** Department of Mechanical and Aerospace Engineering - UAEU, April 2021.

16. **"Modelling and control of a two-link rigid flexible manipulator".** Master's Thesis **–** Department of Mechanical and Aerospace Engineering - UAEU, April 2021.

17. **"Flutter suppression by active controller of a two-dimensional wing with a flap".** Master's Thesis **–** Department of Mechanical and Aerospace Engineering - UAEU, November 2021.

18. **"Aerodynamics and Aeroacoustics optimization of vehicle's side mirror base and exhaust pipe".** (Co-advisor) Master's Thesis **–** Department of Mechanical and Aerospace Engineering - UAEU, June 2022.

PROFESSIONAL ACTIVITIES

- Member of the Board of Trustees of Queen Noor Civil Aviation Technical College – Jordan. (2013-2017).
- Editorial Member for International Journal of Applied Engineering Applications (IJAER)
- Reviewer for International Journal of Applied Engineering Applications and other journals like Journal of Sound and Vibrations, Journal of Intelligent & Robotic Systems, etc.
- Local Organizing Committee Member for the Third International Conference on Thermal Engineering Theory and Applications, May 21 – 23, 2007, Le Royal Hotel, Amman, Jordan.

PUBLICATIONS

- Al-Nimr, M. and **Darabseh, T.**, Analytical Solution for Transient Laminar Fully Developed Free Convection in Open-Ended Vertical Concentric Porous Annuli, Transactions of ASME, Journal of Heat Transfer, Vol. 117, pp. 762-765, 1995.
- Al-Nimr, M. and **Darabseh, T.**, Analytical Solution to Transient Laminar Fully Developed Free Convection in Open-Ended Vertical Channel Embedded in Porous Media, Applied Mechanics and Engineering, Vol. 2, No. 1, pp. 9-32, 1997.
- **Darabseh, T.**, and Genin, J., Analysis of Kinematical Data for Ground Penetrator, Report to Sandia National Laboratories under contract No. BF-4912, August 1999.
- **Darabseh, T.**, and Genin, J., Dynamic Stability of Viscoelastic Columns Loaded by a Follower Force, Proceedings of the Institution of Mechanical Engineers, Part C, Journal of Mechanical Engineering Science, Vol. 218, pp. 1091-1101, 2004.
- Naji, M., Al-Nimr, M., and **Darabseh, T.**, Thermal stress investigation in unidirectional composites under the hyperbolic energy model, International Journal of Solids and Structures, Vol. 44, No. 16, pp. 5111–5121, 2007.
- Tlilan, H., Al-Shyyab, A., **Darabseh, T.**, and Tamotsu, M., Strain-Concentration Factor of Notched Cylindrical Austenitic Stainless Steel Bar with Double Slant Circumferential U-Notches Under Static Tension, Jordan Journal of Mechanical and Industrial Engineering (JJMIE), Vol 1, No. 2, pp 105-111, Dec. 2007.
- **Darabseh, T.**, Naji, M., and Al-Nimr, M., Transient Thermal Stresses in an Orthotropic Cylinder under the Hyperbolic Heat Conduction Model, Heat Transfer Engineering, Vol. 29, No. 7, pp. 632-642, July 2008.
- **Darabseh, T.**, and Bani Salameh, K., Numerical solution of transient thermal stresses in a functionally graded cylinder, 3rd WSEAS International Conference on Engineering Mechanics, Structures, Engineering Geology (EMESEG '10), Corfu Island, Greece, JULY 22-24, 2010.
- Al-Araidah, O., Batayneh, W., **Darabseh, T.** and BaniHani, S., Conceptual design of a single DOF human-like eight-bar leg mechanism, Jordan Journal of Mechanical and Industrial Engineering, Vol. 5, No. 4, pp. 285-289, Aug. 2011.
- Hader, M., **Darabseh, T.** and AlOthman, H., Exergy analysis of ceramic production in Jordan, Jordan Journal of Mechanical and Industrial Engineering, Vol. 5, No. 6, pp. 483-488, Dec. 2011.
- **Darabseh, T.**, Transient thermal stresses of functionally graded thick hollow cylinder under the Green-Lindsay model, World Academy of Science, Engineering and Technology (WASET), 59. ICAMME 2011: International Conference on Applied Mechanics and Mechanical Engineering, Venice, Italy, November 28-30, 2011.
- **Darabseh, T.**, Yilmaz, N., Bataineh M., Transient Thermoelasticity Analysis of Functionally Graded Thick Hollow Cylinder based on Green-Lindsay Model, International Journal of Mechanics and Materials in Design, Vol. 8, No. 3, pp. 247-255, 2012.
- **Darabseh, T.**, Alshaer, B. and Khrais, S., Thermoelastic analysis of 2D-FGM hollow circular cylinder with finite length by finite element method, International Journal of Computer Applications in Technology, Vol. 46, No. 2, pp. 175-186, 2013.
- Alshaer, B., **Darabseh, T.** and Alhanouti, M., Path planning, modeling and simulation of an autonomous articulated heavy construction machine performing a loading cycle, Applied Mathematical Modelling, Vol. 37, No. 7, pp. 5315-5325, 2013.

- Alshaer, B., **Darabseh, T.** and Momani, A., Modeling and control of an autonomous articulated mining vehicle navigating predefined path, International Journal of Heavy Vehicle Systems, Vol. 21, No. 2, pp. 152-168, 2014.
- Yilmaz, N., Vigil, F. M., Donaldson, A. B., **Darabseh, T.**, Investigation of CI engine emissions in biodiesel–ethanol–diesel blends as a function of ethanol concentration, Fuel, Vol. 115, pp. 790-793, 2014.
- **Darabseh, T.**, Ussaleh N., Control of 4dof manipulator using neural network and image processing, International Journal of Engineering and Innovative Technology (IJEIT), Vol. 6, No. 9, pp. 17-23, 2017.
- Al Naimat, F., Ziauddin, M., Mathew, B., **Darabseh, T.**, Alhseinat, E., Performance of concentrated solar collectors: Studying the absorber pipe outlet temperature variations, 2018 5th International Conference on Renewable Energy: Generation and Applications (ICREGA), pp. 87-89, 2018.
- Matter, Y.S., **Darabseh, T. T.**, Mourad, AH. I., Effect of engine location on flutter speed and frequency of a tapered viscoelastic wing, IOP Conference Series: Materials Science and Engineering, Vol. 370, No. 1, pp. 012014, 2018.
- Matter, Y.S., **Darabseh, T. T.**, Mourad, AH. I., Flutter analysis of a viscoelastic tapered wing under bending–torsion loading, Meccanica, Vol. 53, No. 15, pp. 3673–3691, 2018.
- Matter, Y.S., **Darabseh, T. T.**, Mourad, AH. I., Flutter Analysis of a Tapered Viscoelastic Wing Subjected to a Follower Thrust Force, International Review of Aerospace Engineering (IREASE), Vol. 12, No. 1, pp. 46-56, 2019.
- Al-Yafeai, D., **Darabseh, T.,** Mourad, AH., I., Quarter vs. half car model energy harvesting systems, 2019 Advances in Science and Engineering Technology International Conferences (ASET), pp. 1-5, 2019.
- Ajaj, R. M., Omar, F., K., **Darabseh, T., T**., Cooper, J., Flutter of telescopic span morphing wings, International Journal of Structural Stability and Dynamics, Vol. 19, No. 6, pp. 1950061, 2019.
- Al-Yafeai, D., **Darabseh, T.,** Mourad, AH., I., A state-of-the-art review of car suspension-based piezoelectric energy harvesting systems, Energies, Vol. 13, pp. 2336, 2020.
- Al-Yafeai, D., **Darabseh, T.,** Mourad, AH., I., Energy harvesting from car suspension system subjected to random excitation, 2020 Advances in Science and Engineering Technology International Conferences (ASET), pp. 1-5, 2020.
- Thekkuden, D., H., Mourad, AH., I., Bouzid, AH., **Darabseh, T.**, Impact of expansion pressure on wall thinning and contact pressure for hydraulically expanded tube-to-tube sheet joints: Numerical analysis, 2020 Advances in Science and Engineering Technology International Conferences (ASET), pp. 1-6, 2020.
- **Darabseh, T.,** Al-Yafeai, D., Mourad, AH., I., Piezoelectric method-based harvested energy evaluation from car suspension system: Simulation and experimental study, Energy Science & Engineering, Vol. 9, No. 3, pp. 417-433, 2021.
- **Darabseh, T.,** Al-Yafeai, D., Mourad, AH., I., Energy harvesting from car suspension system: Mathematical approach for half car model, Journal of Mechanical Engineering and Sciences, Vol. 15, No. 1, pp. 7695-7714, 2021.
- **Darabseh, T.,** Nonlinear state dependent Riccati equation controller for 3-dof airfoil with cubic structural nonlinearity, International Review of Aerospace Engineering (IREASE), Vol. 9, N0. 2, pp. 97-111, 2022.
- **Darabseh, T.,** Tarabulsi, A., M., Mourad, AH., I., Active flutter suppression of a two-dimensional wing using linear quadratic gaussian optimal control, International Journal of Structural Stability and Dynamics, Vol. 22, N0. 14, Article No. 2250157, 2022.
- **Darabseh, T.,** Tarabulsi, A., M., Mourad, AH., I., Discrete-Time Model Predictive Controller Using Laguerre Functions for Active Flutter Suppression of a 2D wing with a Flap, Aerospace 9(9), 475, 2022.
- **Darabseh, T.,** FEM and Simscape modelling and LQG control of a two-Link rigid-flexible manipulator, Accepted for publication in International Journal of Modelling, Identification, and Control, 2023.

- Zaareer, M., Mourad, AH., **Darabseh, T.**, Khan, S., Elgendi, M., Impact of a vehicle Exhaust pipe position on the lift and drag coefficients: 2D and 3D simulations, International Journal of Thermofluids, 2023.
- Zaareer, M., Mourad, AH., **Darabseh, T.**, Abdullah, K., El Sayed, M., Aeroacoustics Wind Noise Optimization for Vehicle's Side Mirror Base, International Journal of Thermofluids, 2023.

WORKSHOPS

Delivered Workshops

- **Conducted a Course** on Flight Dynamics for Royal Jordanian Air-Force, Spring Semester 2006/2007.
- **Conducted a Course** on Computer Aided Design for Royal Jordanian Air-Force, Fall Semester 2006/2007.
- **Conducted a Workshop** on Computer Aided Design and Finite Elements by Using ProEngineer. Consultative Center for Science and Technology, Just, Irbid, January 2007.
- **Conducted a Workshop** on Programming and Simulation by using MatLab. Consultative Center for Science and Technology, Just, Irbid, January 2008.
- **Conducted a Workshop** on Repair and Maintenance of Vehicles. Consultative Center for Science and Technology, Just, Irbid, June 2008.
- **Conducted a Workshop** on Mechanism Design and Dynamics with ProEngineer Wildfire 2.0. Consultative Center for Science and Technology, Just, Irbid, July 2008.
- **Conducted a Workshop** on Vibration Measurement and Diagnostics**.** Consultative Center for Science and Technology, Just, Irbid, August (3-7), 2008.
- **Conducted a Workshop** on Vibration Measurement and Diagnostics**.** Jordan Phosphate Mines Company, Aqaba, August (24-28), 2008.
- **Conducted a Workshop** on Vibration Measurement and Diagnostics**.** Consultative Center for Science and Technology, Just, Irbid, February (1-4), 2009.
- **Conducted a Course** on Computer Aided Design for Royal Jordanian Air-Force, Spring Semester 2008/2009.

CAMPUS INVOLVMENT

- Mechanical Graduate Program Coordinator (UAEU) (8/2016-8/2021)
- Dynamics and Control Focus Group Coordinator (UAEU) (8/2016-8/2021)
- College of Engineering Board Member (UAEU) (8/2016-8/2018)
- Research Committee – Chair (UAEU) (8/2016-8/2021)
- Continuous Quality Improvement Member (UAEU) (8/2018-8/2021)
- Engineering Research Committee – (JUST) (9/2021-present)

FUNDING RECORD

Principal Investigator *(2016 – 2018)*

- Funding Agency: United Arab Emirates University
- Project Description: *Dynamic Stability of Elastic and Viscoelastic Aircraft Wings*
- Amount: 250,000 AED
- Status: *complete*

Principal Investigator *(2022 –)*

- Funding Agency: Jordan University of Science and Technology
- Project Description: *Experimental Investigation of the Bending-Torsional Flutter of a Tapered Wing Carrying an External Mass*
- Amount: 9,100 JD
- Status: *ongoing*