

Curriculum Vitae



Dr. Feras H. Darwish

Associate Professor

Aeronautical/Mechanical Engineering Departments

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Personal Data:

- Date of Birth: December 14th 1973
- Nationality: Dual **Jordanian – US citizen**
- Marital Status: Married with four children

Education:

- PhD, Mechanical Engineering, North Carolina A & T State University, USA, 2007.
Dissertation: *Experimental and Numerical Investigation of Scarf-Patch Repaired Composite Panels*
- M.Sc, Mechanical Engineering, North Carolina A & T State University, USA, 2004.
Thesis: *Numerical Analysis of a Developing Unsteady Reactive Flow inside a Concentric Annulus Tube with an Adjustable inner Radius*
- Diploma, Mechanical Engineering, Jordan University of Science and Technology, Jordan, 1999.
- B.Sc, Mechanical Engineering, Jordan University of Science and Technology, Jordan, 1996.
Project: *Low Energy Design Building*

Experiences:

- 9/2013-present, Associate Professor, joint appointment at Aeronautical & Mechanical Engineering Departments, Jordan University of Science and Technology, Irbid-Jordan.
- 9/2012-present, Chairman of Aeronautical Engineering Department, College of Engineering, Jordan University of Science and Technology, Irbid-Jordan.
- 9/2012-present, Faculty advisor for the Formula Student Car Project.
- 9/2011-9/2012, Assistant Dean of Research & Director of the Technology Transfer Office, Deanship of Research, Jordan University of Science and Technology, Irbid-Jordan.
- 9/2009-9/2013, Assistant Professor, joint appointment at Aeronautical & Mechanical Engineering Departments, Jordan University of Science and Technology, Irbid-Jordan.
- 9/2008-9/2009, Assistant Professor, Mechanical Engineering Department, Jordan University of Science and Technology, Irbid-Jordan.
- 2007-2008, The Boeing Company, Commercial Airplane Division, Everett, WA (USA): Level II Stress Analyst (Engineer): Structural Repair Analysis for the new 787 dreamliner composite airplane.
- 2004-2007, Center of Composite Materials Research (USA): 4 years experience in the area of *repair of composite laminates* [a project funded by the Federal Aviation Association-FAA].
- 2004-2007, Center of Composite Materials Research (USA): 4 years experience in numerical modeling of static and dynamic structural problems using ANSYS and LS-DYNA. Numerical modeling includes: APDL programming and GUI-modeling of static linear and nonlinear analysis / transient impact applications (blast loads) applied on both isotropic and composite structures.
- 2003-2004, North Carolina A&T State University (USA): 1 year teaching experience at (Mechanical Eng. & Civil Eng. Departments)

- 2001-2002, Center for Aerospace Research: Computational Fluid Dynamics [a project funded by NASA].

Consultations:

- Prepared the Organizational Structure of Al-Safat Company, a Sudanese Based Aircraft Maintenance and Manufacturing Company. Set and defined the qualifications and their indicators for all engineering and technical jobs including the engineering management, supervisors, senior engineers, junior engineers, technicians, sub-technician and task helpers.

Committees:

- Website updates committee member, Mechanical Eng. Dept., JUST (2008 - 2009)
- Chair of the ME technical committee for the Central Tenders Department, JUST (2009)
- ME Dept representative in the Central Tenders Department, JUST (2009)
- Lab monitoring committee member, Aeronautical Eng. Dept., JUST (2009 - present)
- AE Dept representative in the College of Engineering Council, JUST (2009-2012)
- Auditor in the Scientific Research Committee, Deanship of Research, JUST (2011 - 2012)
- Committee member of the Technological Incubator at the College of Engineering, JUST (2012 - present)
- Member of the graduate studies committee at the college of engineering, JUST (2012 – 2013)
- Member of the college of engineering council, JUST (2012 – present)
- Member of the organizing committee for the First Funded Research Conference at Jordan University of Science and Technology (2012).
- Chair of the Aeronautical Eng. Dept. technical committee for the Study Plan Development, JUST (2013-current)
- Member of many other technical committees at the AE department (2013-present)

Publications:

Journal Publication:

1. Sameer Hamoush, Kunigal Shivakumar, **Feras H. Darwish**, Matthew Sharpe, and Paul Swindell, "*Defective Repairs of Laminated Solid Composites*", Journal of Composite Materials, Vol 29, Number 24, 2185-2196, 2005.
2. **Feras H. Darwish**, Sameer Hamoush, and Kunigal Shivakumar, "*Performance of Patch Repaired Composite Panels under Fatigue Loads*", Arabian Journal for Science and Engineering, AJSE, Vol 31, Number 2C, 77-87, December 2006.
3. Mohammad K. Alkam, **Feras H. Darwish**, and Aziz A. Almuhtasib, "*Thermal and Mass Transients in the Developing Region of a Homogeneous Tubular Chemical Reactor*", AIChE, Vol 56, Issue 3, 749-755, 2010.
4. **Feras H. Darwish**, Mohammad A. Al-Nimr and Naser S. Al-Huniti, "*Transient Response of a Clamped Slab under Pressure and Thermal Loads*", Journal of Thermal Stresses, 35: 470-484, 2012.

5. **Feras H. Darwish**, Gharaibeh, M. and Tashtoush, G., "A Modified Equation for the Stress Concentration Factor in Countersunk Holes", *European Journal of Mechanics – A/Solids*, 36, 94-103, 2012.
6. **Feras H. Darwish**, Ghassan M. Atmeh and Zeaid F. Hasan, "Design Analysis and Modeling of a General Aviation Aircraft", *Jordan Journal of Mechanical and Industrial Engineering*, 6 (2), 183 – 191, 2012.
7. **Feras H. Darwish**, Ghassan Tashtoush, Mohammad Gharaibeh, "Stress Concentration Analysis for Countersunk Rivet Holes in Orthotropic Plates", *European Journal of Mechanics – A/Solids*, 37, 69-78, 2012.
8. **Feras H. Darwish**, Mohammad. A. Al-Nimr, "Thermal Stress under the Effect of Nonconventional Heat Conduction Models". *Encyclopedia of Thermal Stresses (ETS)*: Published on December 2013.
9. **Feras H. Darwish**, Lubna Al-Nasser, Omar Al-Araidah, "Tensile Stress Concentration in Plates with Double Countersunk Rivet Holes", *International Journal of Design Engineering*, 5 (2), 158 – 173, 2012.
10. **Feras H. Darwish**, and Kunigal N. Shivakumar, "Experimental and Analytical Modeling of Scarf Repaired Composite Panels", *Mechanics of Advanced Materials and Structures*, 21 (3), 207-212, 2014.
11. Mohammad Hayajneh, **Feras H. Darwish**, Ahmad Al-Shyyab, "A Modeling Strategy and Strain Concentration Analysis for a Countersunk Hole in an Orthotropic Plate", *International Journal of Design Engineering*, **Accepted, 2013**.
12. **Feras H. Darwish**, M.A. Al-Nimr, M.I. Hatamleh, "Thermoelastic Analysis for a Slab Made of a Thermal Diode-Like Material", **submitted**.
13. Ahmad S. Al-Shyyab, **Feras H. Darwish**, "Stress Concentration and Stress Constraint Analyses around a Countersunk Hole in a Plate Subjected to a Biaxial Loading", **submitted**.

Conference Publication:

1. **Feras H. Darwish**, Kunigal Shivakumar, Sameer Hamoush, and David Hsu, "Performance of Patch Repaired Composite Panels – Static and Fatigue", 47th AIAA/ASME/AHS/ASC Structures, Structural Dynamics, and Materials, RI, USA, May 2006.
2. Sameer Hamoush, **Feras H. Darwish**, Kunigal Shivakumar, Dennis Roach, and Hisham Abdul-Al-Fattah, "Destructive and Nondestructive Evaluation of Composite Repairs", Second International IMS Conference on Applications of Traditional and High Performance Materials in Harsh Environments, Sharjah, UAE, March 2006.
3. Zeaid Hasan, **Feras H. Darwish**, and Suhayb Al-Absi, "Failure Stress Analysis of Fiber Reinforced of Composite Laminates under Uniaxial/Biaxial Loading", *Proceedings of the COMSOL Conference*, Boston, 2010.
4. Ghassan M. Atmeh, Zeaid Hasan, and **Feras H. Darwish**, "Design and Stress Analysis of a General Aviation Aircraft Wing", *Proceedings of the COMSOL Conference*, Boston, 2010.

5. Zeaid Hasan, and **Feras H. Darwish**, "*Failure Stress Analysis of Fiber Reinforced of Composite Laminates*", Proceedings of the AIAA Regional Student Conference, NASA Glenn, Houston, 2010.
6. **Feras H. Darwish**, Kunigal N. Shivakumar, "*Experimental and Analytical Modeling of Scarf Repaired Composite Panels*", Proceedings of the International Conference on Composites for 21st Century, Current & Future Trends, Bangalore, India, January 2011.
7. **Feras H. Darwish**, Ahmad Al-Shyyab, Mohammad Hayajneh, "*Strain Concentration Analysis of Biaxially Loaded Countersunk Hole in an Orthotropic Plate*", International Conference on Computational Mechanics, Durham, UK, March 2013.

Professional Development Activities:

1- Conducted the following Aeronautical Engineering courses to Air Force & National Security officers and engineers, 2009

- Flight Dynamics (I)
- Aircraft Performance
- Flight Dynamics (II)
- Aircraft Design

2- Directing and coordinating one-year training programme in Aeronautical Engineering for Air Force & National Security officers and engineers at JUST (2013-2014). This included conducting the following two courses to the participants:

- Aircraft Performance
- Aircraft Design

Courses Taught:

At Jordan University of Science and Technology:

- Dynamics
- Mechanics of Materials
- Mechanics of Materials Lab
- Engineering Mechanics
- Mechanics of Machinery
- Machine Element Design
- Applied Mathematics for Engineers
- Fracture Mechanics
- Aircraft Performance
- Aircraft Design

At North Carolina A & T State University:

- Applied Thermodynamics
- Computer Applications

M.Sc Thesis Supervision:

- A General Equation for Stress Concentration Factor in Countersunk Holes in Orthotropic Plates.
- A General Equation for Stress Concentration Factor in Plates with Double Countersunk Holes.
- Strain Concentration Factor Analysis of Countersunk Holes in Orthotropic Plates.
- Thermal Stress Analysis of a Thermal-Diode like Material.
- Thermoelastic Analysis of a Plate Subjected to a Combined Thermo-mechanical Load Using Nonconventional Heat Conduction Models. (current)
- Thermoelastic Analysis of a Plate Made of Functionally Graded Material and Subjected to a Combined Thermo-mechanical Load. (current)

Graduation Projects Supervision:

- Failure stress analysis of fiber reinforced composite laminates
- Failure stress analysis of adhesively bonded joints
- Hygrothermo-elastic analysis of fiber reinforced composite laminate
- Conceptual design and simulation of a single-engine propeller-driven airplane
- Conceptual design of human-powered aircraft
- Renovation and operating of the RC-airplane of the aeronautical lab
- Operation and taking-off of a homebuilt RC airplane
- A study of the repaired methods of locally damaged metallic plates
- Stress analysis of pressurized patch-repaired thin-walled vessels
- Structural and Limit Load Analysis of an Idealized Aircraft Wing
- Design Type Analysis of a Fuselage Section of a Passenger Aircraft

Thesis and Journal Review Activities:

- Served as an examiner (committee member) for many graduate and master thesis students.
- Reviewed scientific articles in the following Journals:
 - Energy Conversion and Management - Elsevier
 - Advances in Engineering Software – Elsevier

Professional Memberships:

- Jordan Engineers Association (JEA), Jordan
- American Institute of Aeronautics and Astronautics (AIAA), USA

Honors and Awards:

- Awarded a certificate-of-achievement for academic excellence, North Carolina A&T State University, 2007.
- Awarded a certificate-of-achievement for academic excellence, North Carolina A&T State University, 2006.

- Awarded a certificate-of-achievement for academic excellence, North Carolina A&T State University, 2004.
- Awarded a certificate-of-achievement for academic excellence, North Carolina A&T State University, 2003.
- Awarded a certificate-of-achievement for academic excellence, North Carolina A&T State University, 2002.
- Awarded a certificate of achievement for academic excellence, Jordan University of Science and Technology, 1996.
- Awarded a certificate of achievement for academic excellence, Jordan University of Science and Technology, 1995.
- Ranked 2nd out of 80 (B.Sc Mechanical Engineering – 1996)

Funded Research:

- A General Equation for Stress Concentration Factor in Countersunk Holes in Orthotropic Plates, funded by the Deanship of Research, JUST, Grant No. 227/2010, (2010)
- Experimental and Finite Element Investigation of the Uniaxial Stress Concentration Factor in Plates with Double Countersunk Holes, funded by the Deanship of Research, JUST, Grant No. 22/2011, (2011)

Current and Future Research Activities:

- Heat transfer and thermal stresses in the walls of a chemical reactive flow
- Thermoelastic behavior of micro channels due to micro fluid flow and heat transfer
- Thermal and mechanical stresses of gas turbine components
- Stress-based design optimization of gas turbine blades
- Software development for conceptual aircraft design

References:

- Prof. Kunigal Shivakumar
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