

Naim A. M. Khader

Professor
Department of Mechanical Engineering
Jordan University of Science & Technology (JUST)
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E d u c a t i o n

Rensselaer Polytechnic Institute (RPI) (Jan.80 - Aug.82)
Troy, New York
PhD Mechanical Engineering Thesis Title: "Structural Dynamics Analysis for Turbomachinery Bladed Disks"
Rensselaer Polytechnic Institute (RPI) (Sep.78 - Dec.79)
Troy, New York
MSc Aeronautical Engineering Thesis Title " Influence of The Foundation And Support on The Stability of Classical Beams".
Kiev Institute for Engineers of Civil Aviation (KIECA) (Sep.70-Feb.76)
Kiev, Ukraine (Former USSR)
Diploma, Aeronautical Engineering
Kiev University (Sep.69-Jul.70)
Kiev, Ukraine (Former USSR)
Preparatory year to study Russian language

P r o f e s s i o n a l E x p e r i e n c e

University of Cincinnati Structural Dynamics Research Lab
(Sep. 2011-August 2012), Cincinnati OH
Visiting scholar
University of Science and Technology (Oct. 98 - Present)
Irbid-Jordan
Professor, Department of Mechanical Engineering
University of Science and Technology (Sep.96 - Sep.98)
Irbid-Jordan
Vice Dean of Engineering.
Georgia Institute of Technology (Sep.98 - Jun.99)
Atlanta-Georgia, USA
School of Aerospace Engineering
Visiting Associate Professor,
University of Science and Technology (Sep.91 - Oct.98)
Irbid-Jordan
Associate Professor, Department of Mechanical Engineering
University of Jordan (Sep.93 - Aug.94)
Amman-Jordan
Visiting Associate Professor, Department of Mechanical Engineering

University of Science and Technology (Sep.86 - Sep.91)
Irbid-Jordan

Assistant Professor, Department of Mechanical Engineering
Yarmouk University (Jun.83 - Sep.86)

Irbid-Jordan

Assistant Professor, Department of Mechanical Engineering
Yarmouk University (Sep.84 - Sep.86)

Irbid-Jordan

Acting Chairman, Department of Mechanical Engineering
Rensselaer Polytechnic Institute, (RPI) (Sep.82 - Jun.83)

Troy, New York

*Postdoctoral Research Fellow, Mechanical Engineering,
Aeronautical, Engineering and Mechanics Department*
Rensselaer Polytechnic Institute, (RPI) (Sep.79 - Aug.82)

Troy, New York

*Teaching and Research Assistant, Mechanical Engineering,
Aeronautical Engineering, and Mechanics Department*

Rensselaer Polytechnic Institute, (RPI) (Sep.80 - Aug.82)

Troy, New York

Area Manager at the Married Student Housing

Alia, Royal Jordanian Airlines, (Jun.76 - Aug.78)

Amman-Jordan

Aircraft system's Engineer.

I n t e r n a t i o n a l a c t i v i t i e s :

University of Cincinnati Structural Dynamics Research Lab

(Sep. 2011-August 2012), Cincinnati OH

Visiting scholar

Georgia Institute of Technology (Sep.98 - Jun.99)

Atlanta-Georgia, USA

School of Aerospace Engineering

Visiting Associate Professor,

Concordia University (Jun.96 - Aug.96)

Montreal, Canada

*Research work in the area of composite materials, sponsored by Canadian
International Development Agency*

Concordia University, (Jun.95 - Sep.95)

Montreal, Canada

*Research work in the area of composite materials,, sponsored by Canadian
International Development Agency*

Stuttgart University (Jun.93 - Aug.93)

Stuttgart-Germany

Research work in the area of composite materials, sponsored by DAAD

Rensselaer Polytechnic Institute, (RPI) (Jun.86 - Sep.86)

Troy, New York

*Research work in the area of rotary wing aeroelasticity, sponsored by
Fulbright Fellowship*

Rensselaer Polytechnic Institute, (RPI) (Jun.84-Sep.84)

Troy, New York

Research work in the area of structural dynamics and aeroelasticity of gas turbine bladed disks; *sponsored by NASA Lewis Research Center, Grant No. NAG3-37*

C o u r s e s T a u g h t :

Undergraduate Courses:

- Engineering Mechanics, Statics and Dynamics (Yarmouk University, JUST, and University of Jordan)
- Mechanics of Materials (Strength of Materials), Theory and Lab. (Yarmouk University and JUST)
- Aircraft Stability and Control (Yarmouk University and JUST)
- Aircraft Structure(Yarmouk University and JUST)
- Mechanical Vibrations: Theory and Lab. (Yarmouk University, JUST, and University of Jordan)
- Fundamentals of stress analysis (Georgia Institute of Technology-Atlanta-USA)
- Structural analysis by virtual work (Georgia Institute of Technology-Atlanta-USA)

Graduate Courses:

- Advanced Mechanical Vibrations (Yarmouk University, JUST, and University of Jordan)
- Composite materials. (JUST)

S p o n s o r e d R e s e a r c h G r a n t s :

- Modal Parameter Estimation of multiple Flexible Disk-Flexible Shaft System Grant No. 217/2013
- Design and manufacturing of machine fault simulator, sponsored by Industrial Development Bank (Completed 2008)
- Vibration Analysis for Gas Turbine Engine Blades Using New Triangular Shell Element, Grant No. 62/87
- Effect of Polar Dissymmetry Coupled With Shaft Inertia and Flexibility on the Aeromechanical Stability of Rotors. Grant No. 7/88.

Scientific and professional societies:

- American Society of Mechanical Engineers (ASME)
- Society of Experimental Mechanics (SEM)
- Jordan Association of Engineers.

A w a r d s :

- 1993 DAAD fellowship for the summer of 1993
- 1986 Fulbright Fellowship for the summer of 1986

- 1978 Fellowship from Rensselaer Polytechnic Institute for the academic year 1978/1979
- 1969 Scholarship from the Jordanian Government for distinguished achievement in Al_Tawjihi (General Secondary School Exam) during the undergraduate study while at Kiev University and at KIECA

Supervised Master's Theses

- Ground Resonance of Polar Dissymmetric Helicopter Rotors with Anisotropic Hub, (Completed 1987)
- Blade Mistuning Effects on Structural Dynamics Characteristics of Gas Turbine Engine Fans. (Completed 1988)
- Structural Dynamics of Tilt-Prop Aircraft in Hover Mode, (Completed 1989)
- Aeroelastic Stability Study of Tilt-Prop Aircraft in Hover Mode, (Completed 1989)
- Dynamic stability of a rotating Timoshenko shaft subjected to follower axial force and end moment. (Completed 1998)
- Stability analysis for an asymmetric rotor supported by anisotropic bearings, (Completed 1998)
- Experimental and Analytical study of Flexible-Disk flexible-Shaft system, (Completed December 2005)

Publications:

Journal Papers:

1. R. G. Loewy and N. Khader, "Natural Frequency of Rotating Beams Using Nonrotating Modes", Journal of American Helicopter Society, Vol. 27 No. 2, pp. 75 - 78, April 1982
2. R. G. Loewy and N. Khader, "Structural Dynamics of Rotating Bladed-Disk Assemblies Coupled With Flexible Shaft Motions", AIAA Journal, Vol. 22 No. 9, pp. 1319 - 1327, Sep. 1984
3. Ghazi Abu Farsakh and Naim Khader, "New Triangular Finite Element for Free Vibrations of Plates", International Journal of Analytical and Experimental Modal Analysis, Vol. 2, No. 3, pp. 136-143, July 1987.
4. N. Khader and R. G. Loewy, "Shaft Flexibility Effects on The Aeroelastic Stability of A Rotating Bladed-Disk", AIAA Journal of Propulsion and Power, Vol. 5, No. 6, pp. 712 - 726, Nov. 1989.
5. N. Khader and R. G. Loewy, "Shaft Flexibility Effects on the Forced Response of A Bladed-Disk Assembly", Journal of Sound and Vibration, Vol. 139, No. 3, pp. 469 - 485, July, 1990.
6. Naim Khader and Ghazi Abu Farsakh, "A Triangular Shell Element for Vibration Analysis of Cambered and Twisted Fan Blades". The "Finite Elements in Analysis and Design" Journal, Vol. 6, PP 287-301. Jun. 1990.

7. Naim Khader and Samer Masoud, "Vibration of Mistuned Bladed Disks Supported by Flexible Continuous Shafts", *Journal of Sound and Vibration*, Vol. 149, No. 3, Pp. 471 - 488, Oct. 1991.
8. Naim Khader and Riyad Abu-Mallouh, "A Structural Dynamics Study of a Wing-Pylon-Tiltrotor System", *Computers & Structures*, Vol. 45, No. 5/6, pp. 1061-1071, Dec. 1992.
9. Naim Khader, "Stability of Rotating Shafts Loaded by Follower Axial Force and Torque Load", *Journal of Sound & Vibration*, Vol. 182, No. 5, pp. 759-773, Mar. 1995
10. Ghazi Abu-Farsakh and Naim Khader, "Vibration Analysis of Multi-Layered Composite Thin Plates and Shells", *Journal of Structural Engineering*, Vol. 23, No. 3, pp. 137-143, Oct. 1996.
11. Naim Khader, "Stability Analysis for Dynamic Design of Rotors", *Journal of Sound & Vibration*, Vol. 207, No. 3, pp. 287-299, 1997
12. N. Khader and Y. Dhaher, "An Aeroelastic Stability Study For A Wing-Pylon-Tilt Rotor System in Hover". *Transactions of the CSME*, Vol. 22, No. 2, 1998
13. N. Khader "Global Modal Parameter Estimation of a Flexible Disk-Flexible Shaft from Simulated Data". *International Journal of Vehicle Noise and Vibration*, Vol. 8, No. 1, 2012.
14. Naim Khader, "Modal parameters of a rotating multiple-disk-shaft system from simulated frequency response data" *Journal of applied and computational mechanics*, Vol 8, No 2 (2014)

Conference Papers:

1. R. G. Loewy and N. Khader, "Structural Dynamics of Rotating Bladed-Disk Assemblies Coupled With Flexible Shaft Motions", *AIAA/ASME/AHS 24th SDM Conference*, Lake Tahoe, Nev., May 1983
2. N. Khader and R. G. Loewy, "Blade Mistuning Coupled With Shaft Flexibility Effects in Rotor Aeroelasticity", *34-th ASME International Gas Turbine Institute Conference*, Toronto, Canada, Jun. 1989.
3. Naim Khader and Samer Masoud, "The Assumed Mode Method in Structural Dynamics of Bladed-Disk-Shaft Systems". *35-th ASME International Gas Turbine Institute Conference*, Brussels, June 1990.
4. Naim Khader, and Yasin Daher, "An Aeroelastic Stability Study For A Wing-Pylon-Tilt Rotor in Vertical Flight", *34-th Scientific Week*, Lattakia, Syria, Oct. 1995.
5. Samer Masoud and Naim Khader, "Stability Analysis for Unsymmetric shaft with Flexible Bladed Disk" *ASME Turbo Expo '97*, Orlando, Florida, USA, 2-5 June, 1997.
6. Naim Khader, "Stability of Rotors Supported by Flexible Bearings and Loaded by Follower Axial Force and End Moment", *3rd Euromechanics Conference*, Stockholm, Sweden, 18-22 August 1997.
7. N. Khader, A. Atoum, and A. Qaisiya, Theoretical and Experimental modal analysis of multiple flexible disk-flexible shaft system. *SEM annual Conference*, June 3-6, 2007, Springfield, Massachusetts, USA

8. Naim Khader, Global Modal Parameter Estimation of a Flexible Disk-Flexible Shaft System, ICAMM 2010, 13-15 December 2010, Sultan Qaboos University, Muscat, Sultanate of Oman.
9. N. Khader “Modal Parameter Estimation of a Flexible Disk-Shaft System: OMA approach” SEM annual meeting, Uncasville, Connecticut USA June 13 - 16, 2011
10. Naim Khader, “Structural Dynamic Modification to Predict Modal Parameters of Multiple Beams” Society of Experimental Mechanics Annual Conference, June 2013, Lombard IL USA
11. Naim Khader, “Modal Parameter estimation of a Two-Disk- Shaft System by the Unified Matrix Polynomial Approach” Society of Experimental Mechanics International Modal Analysis Conference, February 2014, Orlando FL. USA
12. Naim Khader & Mohammad Ramadan, “Modal parameters of multiple-disk shaft system from multiple reference impact test”, Society of Experimental Mechanics International Modal Analysis Conference, January 2016, Orlando FL. USA

Current Interests:

Experimental and Operational Modal Analysis (Supervision of graduation projects using Matlab and Labview for data collection and signal analysis)

Vibration Measurement for machine fault detection (Supervision of graduation projects with practical application at the Arab Potash Company-Jordan)

Experience in Accreditation of Engineering and Technology Programs:

- Chairman of the Accreditation Committee in Mechanical Engineering, formed by The Council of Higher Education (2000)
- Chairman of the Accreditation Committee in Aeronautical Engineering Technology, formed by The Council of Higher Education (2001)
- Chairman of the committee, formed by the Council of Higher Education to examine the request by the Middle East Air Academy to establish a Bachelor Degree in Aviation (2002)
- Member of the committee, formed by the Higher Education Accreditation Commission to establish Accreditation Standards for Mechanical Engineering (2006)
- Chairman of the committee, formed by the Higher Education Accreditation Commission to establish Accreditation Standards for aeronautical Engineering (2007)
- Chairman of the committee, formed by the Higher Education Accreditation Commission to examine the request for program accreditation, from Queen Noor Aviation Technical college (2009).

- Chairman of the committee, formed by the Higher Education Accreditation Commission to establish Accreditation Standards for Airframe & Power plant, Avionics, Communication & Networks. (2010)

Other Activities

- Represented the Engineering College at the 39-th General Conference of the International Association for the Exchange of Students for Technical Experience (IAESTE), held in Cranfield, UK, January 1998
- Represented the Engineering College at the 38-th General Conference of the International Association for the Exchange of Students for Technical Experience (IAESTE), held in Barcelona, Spain, January 1997
- Represented the Engineering College at the University Council for the 1991/1992 academic years.
- Served in all Department and College Committees
- Designed and carried out a specially tailored course in Composite Materials for practicing engineers in Jordan.
- Designed and carried out a specially tailored course in Mechanical Vibration Problems in Industry for practicing engineers in Jordan.
- Reviewed technical papers for several national and international journal:
 - Journal of Sound and Vibration (UK)
 - International Journal of Vehicle Noise and Vibration (UK)
 - Jordan journal of mechanical and industrial engineering (Jordan)
 - Abhath Al-Yarmouk and Abhath Mu'ta (Jordan)
 - Journal of King Abdul Aziz University (Saudi Arabia).
- Attended the specialized course in vibration “ROCKWELL AUTOMATION VA-1”, on the invitation of the organizer (RAMALLAH ENGINEERING & CHEMICAL ESTB.), held April 2004 in Amman-Jordan