CURRICULUM VITAE

AHMAD A. AL-QAISIA

PROFESSOR

OFFICE ADDRESS:

Mechanical Engineering Department
Faculty of Engineering and Technology
University of Jordan
Amman 11942 -JORDAN
Tel. + 962 – 6 – 535 5000 ext. 22783
Fax + 962 – 6 – 535 5588
Mobile + 962 – 79 850 0056
E-Mail alqaisia@ju.edu.jo

HOME ADDRESS

P. O. Box 13903
Amman 11942
Amman-Jordan
Tel. 962 – 6 - 5335350

PERSONAL INFORMATION:

Nationality:	Jordanian
Birth date:	17/12/1964
Marital status:	Married (3 kids)

EDUCATION:

Ph. D. Mechanical Engineering, Applied Mechanics, University of Bologna, BOLOGNA, ITALY, July 1997
Thesis Title: "*Structural Damage Identification using Vibration Analysis*"
Advisor: Professor Umberto Meneghetti

B. Sc. Mechanical Engineering, Yarmouk University, Irbid, Jordan, Jan. 1987
Senior Project: "*Design and Construction of Lathe Attachment for Machining of Circular Surfaces*"

EXPERIENCE:

- **Teaching**

  Professor, Department of Mechanical Engineering, University of Jordan, Amman-Jordan, June 2009 – Present

  Professor "Visiting", Department of Mechanical and Industrial Engineering, Applied Science University, Amman-Jordan, Sept. 2010 – September 2011

  Associate Professor, Department of Mechanical Engineering, University of Jordan, Amman-Jordan, July 2004 – June 2009

  Associate Professor "Visiting", Department of Mechanical Engineering, Jordan University of Science and Technology, Irbid-Jordan, Sept. 2005 - Sept. 2006
  Assistant Professor, Department of Mechanical Engineering, University of Jordan, Amman-Jordan, October 1997 - July 2004

  Teaching Assistant, Department of Mechanical Engineering University of Jordan, Amman, Jordan, 1990-1992

- **Courses Taught**

  Undergraduate Level
  Statics
  Dynamics
  Engineering Mechanics
  Dynamics of Machinery
  Machine Design
  Engineering Drawing and Descriptive Geometry
  Mechanical Vibrations
  System Dynamics and Modeling
  Noise and Vibration Control
  Mechanical Vibrations Lab.
  Computer Applications (using Mat Lab)
  Mechanical Drawing.

  Graduate Level
  Advanced Mathematics
  Advanced Vibrations
  Analytical Dynamics

- **Administrative**

  Chairman, Mechanical Engineering Department, Sept. 2007 – Sept. 2009

Director, Outreach Consultation Unit (OCU), Sept. 2003 – Sept. 2005

Assistant Dean for Community Service Affairs, Oct. 1999 –Sept. 2002

- **Consultant**

  Part time Consultant at Interdisiplinary Research Consultants I*d*RC, 2000 – Present.
  Supervising and Conducting many; Projects, Research and Surveys related to Infrastructure Projects such as (Water Savings, Energy Audits, Energy Savings, Power Generation)

- **Professional**

  Sales Engineer, FABCO, Riyadh –Saudi Arabia, 1989 –1990

PROFESSIONAL SERVICE:

- **Reviewing activity:** Referee for the following Journals
  - Journal of Sound and Vibration
  - Shock and Vibration
  - Journal of Vibration and Control
  - Nonlinear Dynamics
  - Mechanism and Machine Theory
  - Structural Engineering and Mechanics
  - Applied Mathematics and Computation
  - International Journal of Modelling and Simulation
  - ASME Pressure Vessels and Piping Conferences
  - IASTED International Conference on Modern Non-Linear Theory - Bifurcation and Chaos (MNT 2007)
  - Journal of Quality in Maintenance Engineering (JQME)
  - Jordan Journal of Mechanical and Industrial Engineering (JJMIE)
  - Journal of Deanship of Academic Research (DIRASAT)
  - JIMEC Conferences.

- **Associate Editor:** Journal of Mechatronics and Applications.
- **Conferences:** Scientific committees and Organizing committee of the Jordanian International Mechanical Engineering Conferences and Workshops.
- **Committees:** Accreditation Board of Engineering and Technology (ABET), Final Year Project, Students Evaluation, Examining Committees for M. Sc. and Ph. D. students at the department and other universities.

CONTINUING EDUCATION:

- Conducting training course at Muscat, Oman for OXY Oman on "Condition Based Monitoring using Vibration".
- Conducting training course at Dubai for Dubai Electricity and Water Company (DEWA) on "Vibration Analysis in Rotating Machinery".

- Conducting training course at Riyadh for Saudi Electricity Company on "Vibration Analysis in Rotating Machinery".
- Conducting training course at Abu Dhabi Refinery (TAKREER), Ruwais Training Center on "Vibration Analysis in Machinery".
- Conducting training course at Saudi Electricity Company (SCECO), Jeddah, on "Machinery Diagnostic using Vibration Analysis".
- Conducting training courses at Electrical Training Center, National Electricity Company (NEPCO) for maintenance engineers on "Rotating Machinery Diagnostic using Vibration Analysis".
- Conducting training course at Ministry of Water and Irrigation for engineers from public sector on " Conducting Water and Energy Audit and Analysis".

RESEARCH EXPERIENCE:

- **Research Interests:** Nonlinear Vibrations and Stability, Chaotic Vibrations, Nonlinear Dynamics of Rotating Beams and Blades, Stability of Rotating Blades, Control of Chaos and Bifurcation in Nonlinear Systems, Electro-Mechanical Modeling and Control of Rotating Arms, Cracks and Structural Identification
- **Research Visits:** Funded by German Research Council (DFG) at the Faculty of Mechanical Engineering, Institute of Technical Mechanics (ITM), University of Karlsruhe (Germany).

  June, 16th – August, 26th , 2011
  June, 13th – August, 22th , 2009
  June, 15th – August, 15th , 2008

- **Funded Projects:**
  1. **Stability Analysis of Nonlinear Oscillators with Static and Inertia Nonlinearities**, Funded by Deanship of Academic Research, University of Jordan (July, 1999-July, 2001).
  2. **Experimental Study of the Response and Stability of Nonlinear Oscillators with Static and Inertia Nonlinearities**, Funded by Deanship of Academic Research, University of Jordan (April, 2001-March, 2007).
  3. **Bifurcation and Chaos of an Elastically Restrained Immersed Tapered Beam**, Funded by Deanship of Academic Research, University of Jordan (April, 2007-June, 2012).

PHD. THESIS SUPERVISION:

1) Performance Evaluation of Valveless Micro-Pumps, (May 2010).

M. Sc. THESIS SUPERVISION:

1) Steady State Response and Stability of a Restrained Beam Partially Immersed in a Fluid and Carrying an Intermediate Mass and Rotary Inertia (June 2000).

2) Estimation of Mesh Stiffness and Dynamic Behavior of a Spur Gear System. (May 2002).

3) Chaotic Behavior of Elastically Restrained Beam Partially Immersed in a Fluid and Carrying an Intermediate Mass and Rotary Inertia. (May 2002).

4) Electromechanical Dynamic Model of a Rotating Flexible Arm Driven By Stepper Motor. (August 2003).

5) Dynamics and Control of a Rotating Flexible Arm with Root Flexibility. (August 2003).

6) Nonlinear Natural Frequencies of a Rotating Beam on an Elastic Foundation. (September 2005).

7) Identification of Mechanical Vibrations through Monitoring of Electrical Parameters: A Tool for Predictive Maintenance. (January 2006)

8) Modal Analysis of Flexible Disk on a Flexible shaft. (June 2006)

9) Control of Robotic Arm using Fuzzy Logic (August 2007)

10) Experimental Investigation of Cylindrical Magneto Rheological Fluid Brake (April 2009)

11) Parametric Excitation of a Beam with initial Imperfection (2012)

THESIS COMMITTEES MEMBER:

Participated in several examining committees for the M.S. thesis at Mechanical Engineering Departments of University of Jordan and Jordan University of Science and Technology.

FINAL YEAR PROJECT SUPERVISION:

Supervised more than 100 undergraduate students in different areas: Modeling and Simulation of Mechanical Vibration Systems, Noise and Vibration Control in Buildings, Modeling of Rotating Blades and Beams, Design of Test Rigs for Two Plane Balancing and Misalignment.

COMMUNITY SERVICE:

1. Conducted a consultation for the Four Seasons Hotel, Amman, Jordan, on Verification of the Inertia Bases and Floating Floors used for Vibration and Noise Isolation in Mechanical Equipments Room.
2. Conducted a consultation for National Locks Factory, Amman, Jordan, on Design of Hydraulic system of a Polishing Machine.
3. Consultant for Jordan Engineering Switchgear Co. (JESCO) at assembling facility on: design and selection of anti-vibration mounts of diesel engines and generators, and noise isolation in generators rooms and canopies.

4. Consultant for Arab Aluminum Industry Company (ARAL).
5. Consultant for Petra Engineering Industries Company (PETRA)

PUBLICATIONS:

1. JOURNAL PUBLICATIONS:

A. A. AL-QAISIA and M. N. HAMDAN [2012] "Effect of Rise Shape on Frequency Veering of a Beam Resting on Elastic Foundation". *Under Review Journal of Sound and Vibration*

M. S. ABDEL-JABER, **A. A. AL-QAISIA**, M. ABDEL-JABER and R. G. BEALE [2012] "Steady State Response and Stability of an Elastically Restrained Tapered Beam". *Accepted for in Advanced Steel Construction Journal.*

M. N. HAMDAN, **A. A. AL-QAISIA** and S. ABDALLAH [2012] "Parametric Study of Dynamic Wrinkling in a Thin Sheet on Elastic Foundation". *International Journal of Modern Nonlinear Theory and Application*. **1, (**3), 55–66

S. Al-HOURANI, M. N. HAMDAN, **A. A. AL-QAISIA** and M. S. ASHHAB [2011] "Fabrication and Analysis of Valve-less Micro-pumps". *Jordan Journal of Mechanical and Industrial Engineering (JJMIE)*. **5, (**2), 145–148

A. A. AL-QAISIA and M. N. HAMDAN [2010] "Primary Resonance Response of a Beam with a Differential Edge Settlement Attached to an Elastic Foundation". *Journal of Vibration and Control,* **Vol. 16** (6), 853-877.

M. N. HAMDAN, S. ABDALLAH and **A. A. AL-QAISIA** [2010] "Modeling and Study of Dynamic Performance of a Valveless Micro-pump". *Journal of Sound and Vibration*, **329, (**15), 3121–3136.

A. A. AL-QAISIA and M. N. HAMDAN [2009] "Non-Linear Frequency Veering in a Beam Resting on Elastic Foundation". *Journal of Vibration and Control*. **Vol. 15** (11), 1627-1647.

M. ABDEL-JABER, **A. A. AL-QAISIA** and M. S. ABDEL-JABER [2009] "Non-Linear Natural Frequencies of a Tapered Cantilever Beam". *Advanced Steel Construction.* **Vol. 5** (3), 259-272.

A. A. AL-QAISIA [2008] "Dynamics of a Rotating Beam with Flexible Root and Flexible Hub", *Structural Engineering and Mechanics Journal.* **Vol. 30** (4), 427-444.

S. A. MASOUD and **A. A. AL-QAISIA** [2008] "Influence of Crack Depth and Attached Masses on Beam Natural Frequencies". *International Journal of Modeling and Simulation.* **Vol. 28** (3), 239-247.

M. S. ABDEL-JABER, **A. A. AL-QAISIA**, M. ABDEL-JABER and R. G. BEALE [2008] "Nonlinear Natural Frequencies of an Elastically Restrained Tapered Beam". *Journal of Sound and Vibration*, **313** (3-5), 772–783.

A. A. AL-QAISIA and M. N. HAMDAN [2007] "Subharmonic Resonance and Transition to Chaos of Nonlinear Oscillators with a Combined Softening and Hardening Non-Linearities". *Journal of Sound and Vibration*, **305**, (4-5), 772-782.

A. M. HARB, A. A. ZAHER, **A. A. AL-QAISIA** and M. A. ZOHDY [2007] "Recursive Backstepping Control of Chaotic Duffing Oscillators". *Chaos, Solitons & Fractals.* **34**, (2), 639–645.

S. Z. ISMAIL , **A. A. AL-QAISIA** and B. O. AL-BEDOOR [2006] "Dynamic Model of a Rotating Flexible Arm-Flexible Root Mechanism Driven by a Shaft Flexible in Torsion". *Shock and Vibration.* **13** (6), 577-593

B. O. AL-BEDOOR and **A. A. AL-QAISIA** [2005] "Stability Analysis of Rotating Blade Bending Vibration Due to Torsional Excitation". *Journal of Sound and Vibration.* **282,** (3-5), 1065-1083

A. A. AL-QAISIA and B. O. AL-BEDOOR and [2005] "Evaluation of Different Methods for the Consideration of the Effect of Rotation on the Stiffening of Rotating Beams". *Journal of Sound and Vibration*, **280**, (3-5), 531-553.

A. A. AL-QAISIA [2004] "Non-Linear Dynamics of a Rotating Beam Clamped with an Attachment Angle and Carrying an Inertia Element". *The Arabian Journal for Science and Engineering*, **29** (1C), 81-97.

A. A. AL-QAISIA, G. CATANIA and U. MENEGHETTI [2003] "Crack Localization in Non-Rotating Shafts Coupled to Elastic Foundation Using Sensitivity Analysis Techniques". *Journal of Quality in Maintenance Engineering*, **9** (2), 176-201.

A. A. AL-QAISIA, A. A. HARB, A. A. ZAHER and M. A. ZOHDY [2003] " Robust Estimation-Based Control of Chaotic Behavior in an Oscillator with Inertial and Elastic Symmetric Nonlinearities". *Journal of Vibration and Control*, **9** (6), 665-684.

A. A. AL-QAISIA and M. A. SHEHADEH [2002] "Steady State Response of a Restrained Immersed Beam". *DIRASAT Journal; Engineering Sciences*, **29** (2), 150-175.

A. A. AL-QAISIA and M. N. HAMDAN [2002] "Bifurcation and Chaos of an Immersed Cantilever Beam in a Fluid and Carrying an Intermediate Mass". *Journal of Sound and Vibration*, **253** (4), 859-888.

A. A. AL-QAISIA and M. N. HAMDAN [2001] "Bifurcation of Approximate Harmonic Balance Solutions and Transition to Chaos in an Oscillator with Inertial and Elastic Symmetric Nonlinearities". *Journal of Sound and Vibration*, **244** (3), 453-479.

M. N. HAMDAN, **A. A. AL-QAISIA,** and B. O. AL-BEDOOR [2001] "Comparison of Analytical Techniques for Nonlinear Vibrations of a Parametrically Excited Cantilever". *International Journal of Mechanical Sciences,* **43**, (6), 1521-1542

A. A. AL-QAISIA, M. N. HAMDAN and B. O. AL-BEDOOR [2000] "On the Steady State Response of a Cantilever Beam Partially Immersed in a Fluid and Carrying an Intermediate Mass". *Shock and Vibration,* **7**, 179-194.

A. A. AL-QAISIA and M. N. HAMDAN [1999] "On the Steady State Response of Oscillators with Static and Inertia Non-Linearities". *Journal of Sound and Vibration,* **223** (1), 49-71.

A. A. AL-QAISIA and U. MENEGHETTI [1997] "Crack Localization in Stepped Beams*". International Journal of the Italian Association of Theoretical and Applied Mechanics 'Meccanica',* **32** (4)**,** 315-325.

2. CONFRERENCE PUBLICATIONS:

A. A. AL-QAISIA, A. SHATNAWI, M. ABDEL-JABER and M. ABDEL-JABER [2007] "Non-Linear Natural Frequencies of a Tapered Cantilever Beam". *The Sixth International Conference on Steel and Aluminum Structures* (*ICSAS'07*), July 24-27, 2007, Oxford, UK.

N. KHADER, A. ATOUM and **A. AL-QAISIA**, [2007] "Theoretical and Experimental Modal Analysis of Multiple Flexible Disk-Flexible Shaft System". *2007 SEM Annual Conference on Experimental and Applied Mechanics* (*Society of Experimental Mechanics*), June 4-6, 2007, Springfield, Massachusetts, USA.

S. Z. ISMAIL, **A. A. AL-QAISIA** and B. O. AL-BEDOOR [2004] "On The PD Control of Rotating Flexible Arms Driven by Stepper Motor". *ASME 2004 Pressure Vessels & Piping Conference* **488, PVP2004**..

A. ABED, B. O. AL-BEDOOR and **A. A. AL-QAISIA** [2004] "Model for Vibration of Rotating Beams Supported by Flexible Foundation and Driven by DC Motor". *ASME 2004 Pressure Vessels & Piping Conference* **488, PVP2004**.

A. A. AL-QAISIA [2003] "Effect of Fluid Mass on Non-Linear Natural Frequencies of a Rotating Beam". *ASME 2003 Pressure Vessels & Piping Conference* **468, PVP2003**.

A. A. AL-QAISIA [2002] " Nonlinear Free Vibration of a Rotating Beam Carrying a Tip Mass with Rotary Inertia". *ASME 2002 Pressure Vessels & Piping Conference* **447, PVP2002-1510**, 1-8.

B. O. AL-BEDOOR and **A. A. AL-QAISIA** [2002] "Analysis of Rotating Blade Forced Vibration Due to Torsional Excitation Using the Method of Harmonic Balance". *Proceedings of ASME 2002 Pressure Vessels & Piping Conference* **447, PVP2002-1512**, 17-22.

S. A. MASOUD and **A. A. AL-QAISIA** [2002] "Effect of Concentrated Masses on Dynamic Behavior of a Cracked Beam". *Proceedings* of *IASTED International Conference on Applied Simulation and Modeling (ASM 2002)*, 363-060, 108-113.

B. O. AL-BEDOOR, M. N. HAMDAN and **A. A. AL-QAISIA** [1999] "Nonlinear Natural Frequencies of a Cantilever Beam Partially Immersed in a Fluid and Carrying an Intermediate Mass". *ASME Pressure Vessels and Piping Conference PVP99*, Boston, MA, USA. August 1-5. PVP-Vol. 396, 261-267.

A. AL-QAISIA and U. MENEGHETTI [1997] "Crack Detection in Plates by Sensitivity Analysis". *Proceedings of the XV International Modal Analysis Conference IMAC*, Orlando-Florida, USA. February, Volume 2, 1831-1837.

A. AL-QAISIA and U. MENEGHETTI [1993] "Crack Localization in a Stepped Beam", *Proceedings of XXII Conference of the Italian Association for Stress Analysis*, pp.143-51.

LANGUAGE SKILLS:

Arabic (Native)
English (Fluent)
Italian (Fluent)

REFERENCES:

Professor Ali Hassan Nayfeh
University Distinguished Professor
Engineering Science and Mechanics Department
School of Engineering
Virginia Polytechnic Institute and State University
113-A Burruss Hall
Blacksburg, VA 24061, USA
Tel: + 1 (540) 231 5453, Fax: + 1 (540) 231 0696
E-Mail: anayfeh@vt.edu

Professor Umberto Meneghetti
Mechanical Engineering Department
Faculty of Engineering
University of Bologna
DIEM, Viale Risorgimento, 2 - 40136 – Bologna, ITALY
Tel: + 39 51 20 93449, Fax: + 39 51 20 93446
E-Mail: umberto.meneghetti@mail.ing.unibo.it

Professor M. N. Hamdan
School of Aerospace Engineering

University of Cincinnati
Cincinnati, USA
E-Mail: naderhamdan@hotmail.com

Professor Wolfgang Seeman
Director of Institute of Technical Mechanics (ITM)
Mechanical Engineering Department
Univresity of Karlsruhe (TH)
Kaiser Str. 12, 76131 Karlsruhe
GERMANY
Tel: + 49 721 608 6822
Fax: + 49 721 608 6070
E-mail: seemann@itm.uni-karlsruhe.de