



RESUME Of

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Personal Data

Professor of Structural Mechanics

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AREAS OF RESEARCH INTEREST

- Offshore Structures (floating wind turbines, Current research project).
- Behavior of Structural Systems Under Wind and Earthquake Loadings.
- Seismic Isolation Systems.
- Cable Supported Bridges.

EDUCATION

Ph.D., Engineering Mechanics, Virginia Polytechnic Institute and State University (VPI&SU), Blacksburg, Virginia, USA, May 1992.

Department: Engineering Science and Mechanics (ESM).

- Dissertation Title: “Deterministic and Stochastic Response of Nonlinear systems”.

M.Sc., Civil Engineering, VPI&SU, December, 1985

- Department: Civil Engineering ,
Thesis Title: “A Study of Full Displacement Design of Frame Structures Using Displacement Sensitivity Analysis”.

B.Sc., Alexandria University, Alexandria, Egypt, Junemay 1980. Department of Civil Engineering

ACADEMIC POSITIONS

- **Research Assistant**, *Engineering Science and Mechanics Department (ESM), VPI&SU, USA, January 1986- September 1992*
- **Research Associate**, *Engineering Science and Mechanics Department (ESM), VPI&SU, USA, January 1989- September 1992*
- **Assistant Professor of Structural Dynamics**, *Feb. 1995 – Sep. 2004.*
- **Associate Professor of Structural Dynamics**, *September 2004 – June 2016.*
- **Professor of Structural Dynamics**, *June 2016 - present.*
- **Chairman of the Civil Engineering Technology Department**, *High Institute of Technology (HIT), Benha University, Egypt, October 2004 – November 2006, and November 2007- October 2009.*
- **Chairman of the Civil Engineering Department**, *Faculty of Engineering, NBU, Arar, Saudi Arabia, October 2009 – February 2014*
- **Acting Chairman of the Architecture Engineering Department**, *Faculty of Engineering, Benha University, August 2015– February 2016.*
- **Member of the reviewers Engineering Structural-Faculty Promotion committee for the Supreme Council of Universities in Egypt**, *Jan.2020-present.*
- **Vice Dean for community services & environmental development**, *Faculty of Engineering Delta University, Egypt, September 2019-August 2020.*

EXPERIENCE

Administrative:

- As a *Vice Dean for community services & environmental development at Delta University*, has established many connections with the outside community in the surrounding area (Dakahlia and Dumyat Governments) and as a result many cooperation protocols have been signed between the Faculty of Engineering and governmental and private sectors within the geographical area of Delta University, September 2019-2020t.
- Supervising the 8th Engineering event (Job Fair and Training) for Delta University which will be held on 1-2 March 2020.
- Established the Floating Wind Turbine offshore Structures Lab in Faculty of Engineering at Benha- Benha University Jan. 2016.
- Chairman of the Faculty of Engineering Accreditation committee (NBU), May2013- December2013.
- Member of the *NBU Strategic Planning committee*, 2011-2012.
- Establishing the Civil Engineering Department Program, and department labs, in Northern Border University (NBU), KSA, 2009-2014.
- Member of The organizing committee of the 9th, 10th, 11th, 12th, 13th and 14th International Water Technology Conferences (**IWTC**), Sharm El-Shiekh, Egypt, March 2005 & Alexandria, Egypt, March 2006 & Sharm El-Shiekh, Egypt, March 2007 & Alexandria, Egypt, March 2008 & Hurgada, Egypt, March 2009 and Cairo, Egypt, March 2010.

Academic:

- Conducting experimental and analytical research in many aspects of the engineering structural field.
- Academic advisor for several M.Sc. and Ph.D. students at Benha university.
- External examiner for several M.Sc. and Ph.D. students at Benha university.
- **Peer reviewer** for the Journal of Civil Engineering and Construction Technology.
- **Peer reviewer** for the NONLINEAR DYNAMIC Journal -Springer
- Attended many workshops about the quality assurance in higher education.
- Supervising a number of graduate students working toward their Master or Ph.D. degree (Benha University).
- Teaching Undergraduate and graduate courses
- Teaching comprehensive short courses for engineers on structural engineering software's, AUTOCAD and SAP2000, as a part of community service.
- Teaching a comprehensive short courses titled, "**Repair and Strengthening of structures**" for the engineers of the General Authority for Educational Buildings-December 2015, Egypt.

Member of the following International Scientific Organizations:

- Member of the American Society for Civil Engineer, USA.
- Member of the International Water Technology Association

Undergoing Thesis Under Supervision:

Thesis Title (Ph.D.):

- **Experimental Investigation of the Structural Behavior of Rectangular Steel Beams Filled with Fibers.**

Thesis Title (M.Sc.):

- **Parametric study of the Dynamic Behavior of Spar Type Offshore Structures Supporting Wind Turbine**
- **Structural Behavior of Composite Beams Using Concrete and Steel COLD-FORMED Sections**
- **Experimental Investigation of the Dynamic Characteristics of Spar Type Offshore Structures Under Hydrodynamic forces**

Completed Thesis Under Supervision:

- **Thesis Title (M.Sc.): Dynamic Behavior of Tension Leg Platforms Subjected to Hydrodynamic Forces**

Degree Offered from: Benha University , 2011

- **Thesis Title (M.Sc.): Damage Detection of El-Ferdan Bridge using Artificial Neural Networks**

Degree Offered from: Benha University, 2012

- **Thesis Title (M.Sc.): Enhanced stability for an existing fixed jacket type offshore platform**

Degree Offered from: Benha University, 2019

- **Thesis Title (Ph.D.): Theoretical and Experimental Investigation of TLP's Floating Wind Turbines**
Degree Offered from: Benha University , 2020

Funded Projects:

Project Title: **Dynamic Characteristics of Floating Offshore Structures to Hydrodynamic Forces** (Project # : ٠١٠-٤٣٤)

Project Duration : 9 months

Funding Organization: **Northern Border University, Kingdom of Saudia Aribia**

Status in the project: (PI or Co-PI) PI

Project Title: **Grain size distribution for mounding system at Arar, Saudi Arabia** (Project # : ٠١٢-٤٣٤)

Project Duration : 9 months

Funding Organization: **Northern Border University, Kingdom of Saudia Aribia**

Status in the project: (PI or Co-PI) Co-PI

Part-time Lecturer, 1992- 2007.

Worked as apart-time lecturer in the following universities:

- College of Engineering, Arab Academy for Science and Technology, Alexandria, Egypt
- Graduate Institute for Studies and Research, Alexandria University, Egypt
- Collage of Arts, Mansoura University, Egypt.
- Delta Academy of Science, Egypt.
- Misr High Institute for Engineering & Technology, Egypt.

Research Associate, ESM, VPI&SU, USA, January 1989- September 1992

- Conducted research on several aspects of linear and nonlinear dynamical systems and their stability
- Maintained an experimental vibration lab
- Participated (research and writing progress reports) in several projects that were supported by the USA Army, Naval, and Air Force research offices

Teaching Assistant, ESM, VPI&SU, USA, September 1987- December 1988

- Assisted in teaching Dynamics, Static, Strength of Materials, and Fluid Mechanics courses.

Teaching Experience, November 1992-Present

Experience in teaching and developing the following courses were taught:

Graduate Courses

- *Computer Applications in Advanced Structural Analysis*
- *Management of Information Systems*
- *Numerical Analysis and Statistics*
- *Matrix-Structural Analysis*
- *Finite Element Analysis*
- *Dynamic of Structures*

Undergraduate Courses

- *Introduction to Computers and Information Systems*
- *Computer Applications in Structural Analysis*
- *Introduction to Theory of Plates and Shells*
- *Introduction to Earthquake Engineering*
- *AUTOCAD Applications in Civil Engineering*

- *Introduction to Cable-Stayed Bridges*
- *Introduction to Offshore Structures*
- *Structural Vibrations*
- *Strength of Materials*
- *Analysis of Structures I&II*
- *Applied Mechanics*
- *Stress Analysis*

Professional:

In-Term Chairman of Benha University Engineering Consulting Center May 2009-October 2009, Benah, Egypt

-University Consultation June 1995- October 2009

- Member of the **HIT** Board of the Consulting Center, the responsibilities include:
 - 1-Approving all consultation contracts concerning consultation projects.
 - 2-Supervising and approving:
 - a- Quality control tests for: Reinforced concrete building elements and materials.
 - b- Structural design, consulting work.
 - 3- Repair and Strengthening for several Buildings

-Private Consultation, June 1993- 2009.

- A Certified Structural Consultant in Egypt (for Reinforced concrete Structures)
- Supervisor and consultant for the repair and strengthening works for:
 - The authority of agriculture building in Benha (1,000,000 L.E.) and the technical institute building in Alexandria(10,000,000 L.E.), Egypt.
- Have designed many different engineering projects Such as:
 - Water desalination Station, (Under-ground water tanks, Sharm El-Shiekh), Public Buildings and Factories , Egypt.

REFERENCES

- Dr. Ali h. Nayfeh, University Distinguished Professor, ESM, **VPI&SU**, Blacksburg, Virginia 24061-0219, USA. Ph. : (540)231-5453/ Fax (540)231-2290/ Email: anayfeh@vt.edu
- Dr. Magdy M. Abou-Rayan, Professor and Former President of Mansoura University, Egypt. Fax/pH: (+2050)223-4951. Email: mrayan@mans.edu.eg
- Dr. Gamal E. Khalil, Professor and Former Vice President of Benha University, Egypt, Fax/pH:(+2013)323-0297. Email: gamal1222@gawab.com
- Dr. Mohammed Basiouny, Professor and Dean of the Faculty of Engineering, Sinai University, Egypt. M.basiouny11@yahoo.com

PUBLICATIONS, CONFERENCES, AND SEMINARS PRESENTATIONS

- 1- Ashraf M. Abou-Rayan, Nader N. Khalil, Ahmed Youssef, and Mohamed Eldeib, "Flexural Behavior of Encased Beam Flat or Perorated Steel Cold Formed Sections", International Journal of Steel Structures,(2021),doi.org/10.1007/s13296-021-00515-9.
- 2- Ashraf M. Abou-Rayan, Nader N. Khalil, Aymen A. Zaky,"Flexural Capacity Formulae of Steel Cold-Formed I-Beam With Strengthened Hollow Tubular Flanges", Mansoura Engineering Journal, (MEJ), Vol. 46, Issue 3, September 2021.
- 3- Ashraf M. Abou-Rayan, Nader N. Khalil, Aymen A. Zaky,"Experimental investigation on the flexural behavior of steel cold-formed I-beam with strengthened hollow tubular flanges", Journal of Thin-Walled Structures, 155 (2020) 106971.
- 4- Ashraf M. Abou-Rayan, Mohamed D. Khedr, Nasr-Eldin Ahmed, and Mohamed E. Fayed, "Enhanced stability for an existing fixed jacket type offshore platform", Al-Azhar University Civil Engineering Research Magazine (CERM) Vol. 441, No. 3, July, 2019.
- 5- Ashraf M. Abou-Rayan, Nader N. Khalil and Mohamed S. Afify, "Dynamic Behavior of TLP's supporting 5-MW Wind Turbines under Multi-Directional Waves", Ocean System Engineering, Techno-Press, Vol. 6, Issue 2, June 2016.
- 6- Ashraf M. Abou-Rayan, Nader N. Khalil and Mohamed S. Afify, "Dynamic Characteristics of Three Different TLP's supporting 5-MW Wind Turbines under Multi-Directional Random and Regular Waves", International Journal of Civil Engineering (IJCE), Vol. 3, Issue 3, PP. 37-48 May 2016.
- 7- Ashraf M. Abou-Rayan and Osama S. Hussein, "Influence of Wave Approach Angle on Square TLP's Behavior in Random Sea", The 2015 World Congress on Advances in Structural Engineering and Mechanics (ASEM15), Incheon, South Korea
- 8- Abourayan, A. M., and Hussein, O. S., "Dynamic Responses of Square TLP's to Random Wave Forces" IJCE, 3, 2, pp.103-110, 2014.
- 9- A. M. Abou-Rayan, "Dynamic Assessment of Cable-Stayed Bridges in Egypt," International Journal of Civil Engineering (IJCE) Vol. 3, Issue 1, 67-74, Jan 2014.
- 10- A. M. Abou-Rayan, "Dynamic Characteristics of Offshore Tension Leg Platforms Under Hydrodynamic Forces," International Journal of Civil Engineering (IJCE) Vol. 3, Issue 1, 7-16, Jan 2014.
- 11- A. M. Abou-Rayan, "A comparison of the dynamic characteristics of offshore tension leg platforms under regular weave loads," The 12th. Arab Structural Engineering Conference, Lybia, 16-18/12/2013.
- 12- A. M. Abou-Rayan, and, Amr R. El-gamal, "Wave induced motion of a triangular tension leg platforms in deep waters," Ocean Systems Engineering, Vol.3 No.2, 149-165, 2013.
- 13- A. M. Abou-Rayan, and, Amr R. El-gamal, "Response of Triangular Tension Leg Platforms to Hydrodynamic Forces," International Journal of Civil Engineering (IJCE) Vol. 2, Issue 3, 69-84, July 2013.
- 14- A. M. Abou-Rayan, A. Seleemah, and, Amr R. El-gamal, "Response of Square Tension Leg Platforms to Hydrodynamic Forces," Ocean Systems Engineering, Vol.2 No.2, 115-135, June 2012.
- 15- A. M. Abou-Rayan, "Engineering technology Education" presented at Jubil First International Engineering Conference, KSA, 14-15 May 2012.
- 16- Aymen A. Seleemah, Ashraf M. Abou-Rayan, and, M. Samy, "*A Nueural*

- Network Model for Damage Detection of El-Ferdan Bridge,”* presented at ICSSD2012, India, 4-6 January, 2012.
- 17- A. M. Abou-Rayan, A. Seleemah, and, Amr R. El-gamal, “*Wave Induced Motion of A Squared Tension Leg Platform in Deep Waters,*” presented at the Al-Azhar 11th International Engineering Conference Cairo, Egypt, 21-23, December 2010.
 - 18- A. M. Abou-Rayan, **Offshore Wind Turbines for Electricity Generation and Desalination in Remote Areas,** NATO Programme for Security Through Science, NATO Head Quarter, Brussels, May 6 2010.
 - 19- A. M. Abou-Rayan, **Strategic planning for Universities,** Northern Border University, Arar, KSA, January 2010
 - 20- A. M. Abou-Rayan, “*Seismic Behavior of El-Ferdan Railway Bridge,*” presented at the 6th International Engineering Conference Mansourah-Sharm El-Shiekh, Egypt, 20-23, March 2008.
 - 21- A. M. Abou-Rayan, “*Seismic Assessment of Cable-Stayed Bridges in Egypt,*” presented at the 5th International Engineering Conference Mansourah-Sharm El-Shiekh, Egypt, 27-31, March 2006.
 - 22- A. M. Abou-Rayan, **Introduction to Computers, Information Technology, and Operating Systems,** Collage of Arts, Mansoura University, Egypt, (in Arabic) 2005.
 - 23- A. M. Abou-Rayan, **Formal Technical Writing,** Delta Academy for Science, Mansoura, Egypt, 2005.
 - 24- A. M. Abou-Rayan, **Introduction to Computers and Information Technology,** Collage of Arts, Mansoura University, Egypt, (in Arabic) 2004.
 - 25- S. A. Zayan, and A. M. Abou-Rayan, **Decision Support Systems,** Delta Academy For Science, Mansoura, Egypt, 2004.
 - 26- A. M. Abou-Rayan, “*Seismic Assessment of Aswan Cable-Stayed Bridge,*” presented at the 4th International Engineering Conference Mansourah-Sharm El-Shiekh, Egypt, 20-22, April 2004.
 - 27- A. M. Abou-Rayan, “*Static And Dynamic Analysis of Aswan Cable-Stayed Bridge,*” Mansourah Engineering Journal, Mansourah University, 29, 1, 91-110, 2004.
 - 28- A. M. Abou-Rayan, “*Finite Element Simulation of Laterally Loaded Single Piles,*” Material Engineering Journal, Halwan University, Feb. 2004.
 - 29- A. M. Abou-Rayan, **Matrix Structural Analysis,** HIT, September 2003.
 - 30- A. M. Abou-Rayan, “*Three Dimensional Nonlinear Seismic Behavior of Suez-Canal Cable-Stayed Bridge,*” Presented at the Fourth International Conference on Civil and Architecture Engineering, The Military Technical College, Cairo, 14-16 May 2002.
 - 31- A. M. Abou-Rayan, **Analysis of Circular Plates,** HIT, January 2002.
 - 32- M. M. El-Saadany, A. M. Abou-Rayan, and A. A. Easa, “*Effect of Lime on The Collapsibility of Compacted Fine-Sand,*” Civil Engineering Research Magazine, Al-Aazhar University, 24, 1, 2002.

- 33- A. Seleemah, , and A. M. Abou-Rayan “*Three Dimensional Seismic Analysis For High Raise Symmetric and Unsymmetric Set Back Structures,*” Mansourah Engineering Journal, Mansourah University, 26, 3, 2001.
- 34- A. M. Abou-Rayan, and A. A. Seleemah, “*The Feasibility of Longer Spans in Cable-Stayed Bridges,*” Mansourah Engineering Journal, Mansourah University, 26, 2, 2001.
- 35- A. A. Seleemah, and A. M. Abou-Rayan “*Influence of Existence of Edge Pile System on The Behavior of Mat Foundations,*” Mansourah Engineering Journal, Mansourah University, 26, 2, 2001.
- 36- A. M. Abou-Rayan, and A. A. Seleemah, “*Cable-Stayed Bridges – Parametric Analysis,*” Civil Engineering Research Magazine, Al-Azhar University, 23,1, 2001.
- 37- A. M. Abou-Rayan, “*Dynamic Response of Offshore Structures Due to Hydrodynamic Forces,*” Civil Engineering Research Magazine, Al-Aazhar University, 21, 2, 335-344, 1999.
- 38- A. M. Abou-Rayan, “*Stochastic Stability of Nonlinear Systems Under Random Excitation,*” Proceedings of the Third Alexandria Conference On Structural and Geotechnical Engineering, Alexandria, 27-29 December 1997.
- 39- A. M. Abou-Rayan, A H. Nayfeh, D. T. Mook, and M. A. Nayfeh, “*Nonlinear response of a parametrically Exited Buckled Beam,*” Journal of Nonlinear Dynamics 4, 499-525, 1993.
- 40- A. M. Abou-Rayan and A. H. Nayfeh, “*Stochastic Response of a Duffing Oscillator to External and Parametric Random Excitation,*” Proceedings of the AIAA/ASME/ASCE/AHS/ASC 34th Structures, Structural Dynamics, and Materials Conference, 1583-1593, 1993.
- 41- A. M. Abou-Rayan and A. H. Nayfeh, “*Stochastic Response of a Parametrically Exited Buckled Beam to Wide-Band Random Excitation,*” Presented at the Fourth Conference on Nonlinear Vibrations, and Dynamics of Structures and Mechanisms, Blacksburg, Virginia, USA, June, 1992.
- 42- A. M. Abou-Rayan and A. H. Nayfeh, “*Response of a Two-Degree-of-Freedom System Under Broad-Band Random Excitation,*” Proceedings of the AIAA/ASME/ASCE/AHS/ASC 33rd Structures, Structural Dynamics, and Materials Conference, 1774-1782, 1992.
- 43- A. M. Abou-Rayan, A H. Nayfeh, D. T. Mook, and M. A. Nayfeh, “*Theoretical and Numerical Analysis of a parametrically Exited Buckled Beam,*” Proceedings of the 62nd Shock and Vibration Symposium 1, 92-101, 1991.
- 44- A. M. Abou-Rayan, A H. Nayfeh, D. T. Mook, and M. A. Nayfeh, “*Nonlinear Analysis of a parametrically Exited Buckled Beam,*” Presented at the Third Conference on Nonlinear Vibrations Stability, and Dynamics of Structures and Mechanisms, Blacksburg, Virginia, USA, June 25-27, 1990.