

## **ASHRAF BADIR, PhD, PE**

Associate Professor, Department of Environmental and Civil Engineering,  
U.A. Whitaker College of Engineering, Florida Gulf Coast University, Fort Myers, FL 33965

### **TEACHING EXPERIENCE**

Twenty six years of teaching engineering courses including: introduction to engineering, problem solving & design for engineers, engineering statics and dynamics, introduction to materials, mechanics of materials, structural analysis, steel design, reinforced concrete design, advanced reinforced concrete design, transportation engineering, and civil engineering senior design.

### **EDUCATION**

**Doctor of Philosophy**  
March 1992

**Georgia Institute of Technology**, Atlanta, Georgia  
School of Aerospace Engineering  
Thesis: Analysis of Advanced Thin-Walled Composite Structures.

**Master of Science**  
June 1989

**Georgia Institute of Technology**, Atlanta, Georgia  
School of Aerospace Engineering

**Master of Science in  
Civil Engineering**  
August 1985

**Alexandria University**, Alexandria, Egypt  
Department of Civil Engineering  
Thesis: Elastic Stability of Structures.

**Bachelor of Science in  
Civil Engineering**  
June 1982 (with Honor)

**Alexandria University**, Alexandria, Egypt  
Department of Civil Engineering  
Senior Project: Design of Reinforced Concrete Structures

### **WORK HISTORY**

August 2008 – Present

Associate Professor, Department of Environmental and Civil Engineering, Florida Gulf Coast University

August 1998 – May 2008

Associate Professor, Department of Engineering, Clark Atlanta University

October 1993 - August 98

Assistant Professor, Department of Engineering, Clark Atlanta University

April 1992 - August 1993

Post Doctoral Fellow, School of Aerospace Engineering, Georgia Institute of Technology

January 1988 - March 1992

Graduate Research Assistant, School of Aerospace Engineering, Georgia Institute of Technology

Sep. 1986 - Dec. 1987

Graduate Research Assistant / Teaching Assistant, Department of Civil Engineering, University of Windsor, Windsor, Ontario, Canada.

Worked on Soil-Steel Structure Interaction in a project studying the response of soil-metal arch bridge superstructures supported by reinforced earth abutments.

Completed Ph. D. course requirements in Civil Engineering.

Taught courses in Structural Analysis, Steel Design, Soil Mechanics and Engineering Mechanics.

### **WORK HISTORY (CONT'D)**

- Sep. 1985 - Aug. 1986      Assistant Lecturer, Department of Civil Engineering, Faculty of Engineering, Alexandria University.  
Taught courses in Theory of Structures and Strength of Materials.
- May. 1983 - June 1986      Design Engineer, Civil Engineering Consulting Office, Alexandria, Egypt.  
Responsible of designing reinforced concrete/steel buildings and foundations.
- Sep. 1982 - Aug. 1985      Graduate Research Assistant / Teaching Assistant, Department of Civil Engineering, Faculty of Engineering, Alexandria University.  
Taught courses in Theory of Structures.

### **ACADEMIC AND PROFESSIONAL SERVICES**

- Chair**, Faculty Search Committee, Department of Environmental and Civil Engineering, Florida Gulf Coast University
- Chair**, Peer Review Committee, U.A. Whitaker College of Engineering, Florida Gulf Coast University
- Member**, Faculty Affairs Committee, Florida Gulf Coast University, 2009 - 2010
- Member**, Faculty Search Committee, Department of Environmental and Civil Engineering, Florida Gulf Coast University
- Member**, Peer Review Committee, U.A. Whitaker College of Engineering, Florida Gulf Coast University
- Member**, Safety & Facilities Committee, Florida Gulf Coast University, 2009 - 2010
- Member**, LCOB Instructional Resources & Responsibility, 2008 – 2010.
- Member**, LCOB Faculty Advisory Committee, 2010 – 2011.
- Instructor**, Fundamental of Engineering Review Course, Florida Gulf Coast University
- Chair**, Accreditation Board for Engineering and Technology (**ABET**) Committee, Department of Engineering, Clark Atlanta University
- Chair**, Promotional and Tenure Committee, Department of Engineering, Clark Atlanta University
- Reviewer**, American Society for Engineering Education (ASEE) Annual Conference & Exposition
- Reviewer**, Civil Engineering & Architecture Journal
- Reviewer**, USARO Proposals
- Reviewer**, International Journal of Solids and Structures
- Reviewer**, ASTM STP on Composite Materials: Fracture and Fatigue
- Reviewer**, ASTM Journal of Composite Technology and Research

### **NON-ACADEMIC PROFESSIONAL EXPERIENCE**

- **Structural Design Engineer** designing reinforced concrete/steel industrial buildings and foundations, Civil Engineering Consulting Office for over three years.

## RESEARCH EXPERIENCE

- **Stability of structures** as applied to frames and plates
- **Structural analysis of anisotropic thin-walled sections** subjected to static loading and hygrothermal effects
- **Elastically tailored structures** as applied to laminated plates and thin-walled sections
- **Analytical modeling of delamination** in laminated composites using sublaminates approach and fracture mechanics
- **Study of hygrothermal effects** in composites through analysis of residual stresses and application to fracture problems
- **Fatigue testing** of laminated composite under room and elevated temperature

## TEACHING AWARDS

**Professor of the Year Award**, Department of Engineering, Clark Atlanta University, 2006

**Most Dedicated Civil Engineering Professor**, Department of Engineering, Clark Atlanta University, 2002, 2003 and 2004.

**Instructional Excellence Award in Civil Engineering**, Department of Engineering, Clark Atlanta University, 1999, 2002 and 2004

**Best Mentor Award**, NSF-HBC&UP for Enhancing STEM Education at CAU, 2002

## RESEARCH/PRESENTATION AWARDS

**AIAA Jefferson Goblet Paper Award**, 33rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Dallas, Texas, April 1992.

**AIAA Best Presentation Award**, Aerospace Technology Symposium, Atlanta, Georgia, February 1992.

**ASTM Best Paper Award**, Third Symposium on Composite Materials: Fatigue and Fracture, November 1989.

## PUBLICATIONS AND PRESENTATIONS

- Badir, A. and Badir, M. "Column Analogy in Multi-Span Hinged Frames," *Electronic Journal of Structural Engineering* 18(2) 2018, pp. 133-138.
- Badir A., Liao J., Tanya K., Papkov G., Nguyen L. and O'Neill R., "Exam Wrappers, Reflection and Student Performance in Engineering Mechanics," *Proceedings of the 125<sup>th</sup> American Society for Engineering Education (ASEE) Annual Conference & Exposition*, Salt Lake City, UT, June 24 – 27, 2018, Paper ID #21605.
- Badir, Ashraf, Nguyen, Long, O'Neill, Robert, Kinzli, Kristopher-Dietrich, Komisar, Simeon and Kim, Jong-Yeop "Contributions of the Industry Involvement in Civil and Environmental Engineering Capstone Design Projects" *Proceedings of the 125<sup>th</sup> American Society for Engineering Education (ASEE) Annual Conference & Exposition*, Salt Lake City, UT, June 24 – 27, 2018., Paper ID #21331
- Kinzli, Kristoph-Dietrich, Kunberger, Tanya, O'Neill, Robert and Badir, Ashraf "A Low Cost Approach for Rapidly Creating Demonstration Models for Hands-on Learning," *European Journal of Engineering Education*, 2017

- Badir, Ashraf and O'Neill, Robert "Homework Graded by Students" Proceedings of the 124<sup>th</sup> American Society for Engineering Education (ASEE) Annual Conference & Exposition, Columbus, OH, June 25 – 28, 2017.
- Lura, Derek, O'Neill, Robert, Badir, Ashraf and Nguyen, Long "Homework Methods in Engineering Mechanics" Proceedings of the 124<sup>th</sup> American Society for Engineering Education (ASEE) Annual Conference & Exposition, Columbus, OH, June 25 – 28, 2017.
- O'Neill, Robert, Badir, Ashraf, Nguyen, Long and Lura, Derek "Homework Methods in Engineering Mechanics, Part Two" Proceeding of the 123<sup>rd</sup> American Society for Engineering Education (ASEE) Annual Conference & Exposition, New Orleans, LA, June 26 – 29, 2016.
- Lura, Derek, O'Neill, Robert and Badir, Ashraf "Homework Methods in Engineering Mechanics," Proceeding of the 122<sup>nd</sup> American Society for Engineering Education (ASEE) Annual Conference & Exposition, Seattle, WA, June 14 – 17, 2015.
- Badir, A. and Badir, M. "Column Analogy in Multi-Cell Structures with Fixed Columns," *Electronic Journal of Structural Engineering*, 12(1), 2012, pp. 95-107.
- Badir, A. "Elastic Buckling Loads of Hinged Frames by the Newmark Method," *International Journal of Applied Science and Technology*, Vol. 1 No. 3, June 2011.
- Hu, Hurang, Badir, A. and Abatan, A. "Buckling Behavior of a graphite/epoxy composite plate under parabolic variation of axial loads," *International Journal of Mechanical Sciences*, No. 45, 2003, pp. 1135-1147.
- Armanios, E. and Badir, A. "Damage Tolerance Analysis of Stiffened Composites and Rotor Hubs" Presented at the Rotorcraft Center Of Excellence Annual Program Review, Georgia Institute of Technology, Atlanta, GA, March 31<sup>st</sup>, 2003.
- Badir, A., Shonkwiler, B. and Talreja, R. "Fatigue Property Characterization Of T650-35/AMB21 Laminates Under Room And Elevated Temperature" Proceedings of the 43<sup>rd</sup> AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Denver, Colorado, 22-25 April 2002, AIAA Paper 2002-1679.
- Veazie, D., Badir, A. and Grove, R. "Effects of Titanium Plies on the Strength of a Hybrid Titanium Composite Laminate," *Journal of Thermoplastic Composite Materials*, Vol. 11, No. 5, September 1998 pp. 443-454.
- Badir, A. and Shonkwiler, B "Experimental Investigation Of The Fatigue Properties Of Unidirectional T650-35/AMB21 Laminates," Proceeding of the *Fifth International Conference on Composite Engineering*, Las Vegas, Nevada, July 5-11, 1998.
- Badir, A. and Hu, H. "Elastic Buckling of Laminated Plates Under Varying Axial Stresses." *Proceeding of the 39th AIAA/ASME/ASC/AHS/ ASC Structures, Structural Dynamics and Materials (SDM) Conference*, Long Beach, California, April 20-23, 1998, pp. 635-640.
- "Fatigue Testing of Unidirectional T650-35/AMB21 Laminates." *Proceedings of the Fifth HBCUs Research Conference*, Sponsored by NASA, Ohio Aerospace Institute, April 8-9, 1998.

- Badir, A., Hu, H. and Diallo, A. "Buckling of Composite Plates Under Combined Non-Uniform Stresses." Presented at the NASA URC Technical Conference, Huntsville, Alabama, February 22-25, 1998.
- Badir, A., Hu, H. and Diallo, A. "Elastic Buckling of Orthotropic Plates Under Varying Axial Stresses." *Proceedings of the American Society For Composites, Twelfth Technical Conference on Composite Materials*, Dearborn, Michigan, October 6-8, 1997, pp. 23-30.
- Veazie, D., Badir, A. and Grove, R. "Compressive Buckling of a Hybrid Titanium Composite Laminate," *Proceedings of the American Society For Composites, Twelfth Technical Conference on Composite Materials*, Dearborn, Michigan, October 6-8, 1997.
- Badir, A. "Blended-Wing-Body Structural Technology Study." *Presented at the Blended Wing Body Review*, NASA Langley Research Center, Hampton, Virginia, October 2, 1997.
- Badir, A. and Hu, H. "Stability Of Composite Plates Under A Tensile/Compressive/Tensile Stress That Varies Parabolically In The Direction Of The Loading," *Proceedings of the Fourth International Conference on Composites Engineering (ICCE/4)*, Big Island of Hawaii, July 6-12, 1997, pp. 121-122.
- Badir, A. and Mehreteab, M. " *Proceedings of the Fourth HBCUs Research Conference*, Sponsored By NASA, Ohio Aerospace Institute, Cleveland, Ohio, April 9-10, 1997.
- Badir, A., Mehreteab, M., Shonkwiler, B. and Talreja, R. "Fatigue Damage in Unidirectional T650-35/AMB21" *Proceedings of the Advanced High Temperature Engine Materials Technology Program (HITEMP) Review*, Cleveland, Ohio, April 29-30, 1997, paper 14, pp. 1-11.
- David R. Veazie, Ashraf M. Badir and Ronald O. Grover, Jr. "Effects of Titanium Plies on the Strength of a Hybrid Titanium Composite Laminate." *Proceedings of the 11th Technical Conference of the American Society for Composites*, Atlanta, Georgia, October 7-9, 1996, pp.291-299.
- W. Karl Lentz, Erian A. Armanios and Ashraf M. Badir "Constrained Optimization Of Thin-Walled Composite Beams With Coupling," *Proceedings of the 37th AIAA/ASME/ASC/AHS/ ASC Structures, Structural Dynamics and Materials (SDM) Conference*, Salt Lake City, Utah, April 18-20, 1996, pp. 2326-2334.
- Armanios, Erian A. and Badir, Ashraf M. "Free Vibration Analysis of Anisotropic Thin-Walled Closed-Section Beams," *AIAA Journal*, Vol. 33, No. 10, October 1995, pp. 1905-1910.
- Badir, Ashraf "Stiffness Matrix Formulation For Anisotropic Beams," *Proceedings of the ASCE Engineering Mechanics Conference*, Boulder, Colorado, May 21-24, 1995, pp. 257-260.
- Badir, Ashraf "Analysis of Two-Cell Composite Beams," *Proceedings of the 36th AIAA/ASME/ASC/AHS/ ASC Structures, Structural Dynamics and Materials (SDM) Conference*, New Orleans, LA, April 10-13, 1995, pp. 419-424.
- Badir, Ashraf "Structural Modeling Of Multi-Cell Composite Beams," *Proceedings of International Conference on Composites Engineering*, New Orleans, Louisiana, August 28-31, 1994, pp. 31-32.

- Armanios, E., Badir, A., Dancilla, S., Thakker, A. and Dorbar, P. "Free Vibration of a Metal Matrix Composite Shell with Circumferential Reinforcement," *Proceedings of the 35th AIAA/ASME/ASC/AHS/ ASC Structures, Structural Dynamics and Materials (SDM) Conference*, Hilton Head, South Carolina, April 18-20, 1994, pp.172-181.
- Armanios, E. and Badir, A. "Free Vibration Analysis of Anisotropic Thin-Walled Closed-Section Beams," *Proceedings of the 35th AIAA/ASME/ASC/AHS/ ASC Structures, Structural Dynamics and Materials (SDM) Conference*, Hilton Head, South Carolina, April 18-20, 1994, pp. 164-171.
- Badir, Ashraf "Analysis of Composite Beams Under Mechanical And Hygrothermal Loads," *Proceedings of the Second Annual Engineering and Architecture Symposium*, Prairie View, Texas, March 21-22, 1994, pp. 327-332.
- Berdichevsky, V. L., Armanios, E. A., and Badir, A. M. "A New Look at Thin-Walled Composite Beam Modeling Approaches," *Proceedings of the 9th International Conference on Composite Materials*, Madrid, Spain, 12-16 July, 1993.
- Badir, Ashraf "Theory of Composite Thin-Walled Beams," Invited Seminar presented at Virginia Polytechnic Institute, School of Aerospace and Ocean Engineering, Blacksburg, Virginia, June 1993.
- Badir, Ashraf, Berdichevsky, Victor and Armanios, Erian "Theory of Anisotropic Thin-Walled Opened-Cross-Section Beams," *Proceedings of the 34th AIAA/ASME/ASC/AHS/ ASC Structures, Structural Dynamics and Materials (SDM) Conference*, La Jolla, California, April 19-21, 1993, pp. 2761-2770.
- Berdichevsky, V., Armanios, E. and Badir, A. "Theory of Anisotropic Thin-Walled Closed-Cross-Section Beams", *Composite Engineering*, Special Issue on the Use of Composites In Rotorcraft and Smart Structures, Vol. 2, Nos. 5-7, 1992, pp. 411-432.
- \*Badir, Ashraf "Theory of Anisotropic Thin-Walled Closed-Section Beams with Hygrothermal Effects," *Proceedings of the 33rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials (SDM) Conference*, Dallas, Texas, April 13-15, 1992.
- †Armanios, E. A., Badir, A. M., and Berdichevsky, V. L. "An Assessment of Thin-Walled Closed-Sections Composite Beam Theories," presented at the AIAA Aerospace Technology Symposium, Atlanta, Georgia, February 1992.
- §Armanios, E. A., Sriram, P. and Badir, A. M. "Fracture Analysis of Transverse Crack-tip and Free-Edge Delamination in Laminated Composites," *Composite Materials: Fatigue and Fracture (Third Volume)*, *ASTM STP 1110*, T. Kevin O'Brien, Ed., 1991, pp. 269-286.
- Erian Armanios, Ashraf Badir, and Victor Berdichevsky "Effect of Damage on Elastically Tailored Composite Laminates," *Proceedings of the American Helicopter Society, International Technical Specialists' Meeting on Rotorcraft Basic Research*, Georgia Institute of Technology, Atlanta, Georgia, March 25-27, 1991, pp. 48(1)-48(11).

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\* Jefferson Goblet Paper Award, offered by the AIAA at the 33rd SDM Conference.

† Best Presentation Award given by the AIAA Atlanta Section.

§ Best Presented Paper Award offered by the ASTM Committee D30 at the ASTM 3rd Symposium on Composite Materials

- Armanios, E. A. and Badir, A. M. "Hygrothermal Influence on Mode I Edge Delamination in Composites," *Composite Structures*, Vol. 15, No. 4, 1990, pp. 323-342.
- Armanios, E. A. and Badir, A. M. "Hygrothermal Influence on the Edge Delamination in Composites," *Proceedings of the American Society For Composites, Fourth Technical Conference on Composite Materials*, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, October 3-5, 1989, pp. 944-953.
- Armanios, E. A., Badir, A. M., and Sriram, P. "Sublaminar Analysis of Mode I Edge Delamination in Laminated Composites," *Proceedings of the 30th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials (SDM) Conference*, Mobile, Alabama, April 1989, pp. 2109-2116.

### **PROFESSIONAL MEMBERSHIP**

**Member**, American Society of Civil Engineers (ASCE)

**Member**, American Society for Engineering Education (ASEE)

**Member**, American Concrete Institute (ACI)

**Member**, Florida Structural Engineers Association, Southwest Florida (FSEA SWFL)

**Registered Professional Engineer**, State of Florida, registration # 75439