### **Values**

- develop student thinking and problem solving
- integrate real world issues with theories in STEM
- respond to employer needs and expectations
- use educational research and student assessment to inform innovations in education

## **Mission Statement**

To promote high-quality undergraduate education in science, technology, engineering and mathematics through peer reviewed articles that provide

- Case studies and other innovations in education
  - Well founded in STEM content
  - Informed by educational research
  - Tested through assessment of impact on student learning
- Results from educational research that informs teaching and learning in STEM
- Recent developments that impact STEM education in such areas as policy and industry needs

#### Editor-in-Chief

P.K. Raju, Ph.D.

Department of Mechanical Engineering 1418 Wiggins Hall, Auburn University, AL 36849

#### **Managing Editor**

Murty P Raju, M.S., Georgia Tech; D.E., Columbia University

699 Coligny Court, Atlanta, GA 30350

Phone: (678) 313-9672 Email: Murty\_raju@yahoo.com

#### **Associate Editor**

Eliza Banu, Ph.D.

School of ECAM, College of Engineering,

The University of Georgia

597 D.W. Brooks Dr, Athens, GA, 30602

Phone: (706) 542-8869 Email: Eliza. Banu@uga.edu

#### **Editorial Assistants**

Sarah E. Franklin

Biological Engineering

The University of Georgia

Phone: (706) 936-7447 Email: sef99837@uga.edu

Ava Bourbeau

Journalism

Auburn University

Phone: (706) 542–8869 Email: aeb0122@auburn.edu

Anna Mathis

Professional and Public Writing

Auburn University

Phone: (706) 542-8869 Email: acm0136@auburn.edu

Managing Editor (Emeritus)

Chetan S. Sankar

Auburn University

Phone: (334) 524-6436 Email: sankacs@auburn.edu

# **International Editorial Advisory Board Members**

**Stephanie G Adams**, Dean and Lars Magnus Ericsson Chair, University of Texas at Dallas

M. Dayne Aldridge, Adjunct Accreditation Director for Engineering, ABET, Washington DC

**Timothy J. Anderson,** Distinguished Professor of Chemical Engineering, University of Massachusetts, Amherst. MA

Cynthia Atman, Founding Director, Center for Engineering Learning and Teaching, University of Washington, WA

Frank S. Barnes, Distinguished Professor Emeritus, Electrical and Computer Engineering, University of Colorado, Boulder, CO

Myles Boylan, Program Director, National Science Foundation

John D. Bransford, James W. Mifflin University, Professorship and Professor, College of Education, University of Washington, WA

Monica F. Cox, Professor, Department of Engineering Education, College of Engineering, The Ohio State University, Columbus, OH

Victor L. Cubillos, Rector, Universidad Austral de Chilie, Valdivia, CHILE

Virginia Davis, Daniel F. and Josephine Breedent Professor of Chemical Engineering, Auburn University, AL

Tim Edlund, Past President, NACRA, Associate Professor, Earl G. Graves School of Business and Management Morran State University MD

Lyle Feisel, Retired, Dean Emeritus of Thomas J. Watson School of Engineering and Applied Science, Binghampton University, NY

**Richard Felder**, Hoechst Celanese Professor Emeritus, Department of Chemical and Biomolecular Engineering, North Carolina State University, NC

Norman Fortenberry, Executive Director, American society for Engineering Education, Washington DC

**Eli Fromm**, Director, Center for Educational Research, Drexel University

**Lothar Gaul**, Director, Institut fur Mechanik, University of Stuttgart, GERMANY

Alain Gerard, Professor, Laboratoire de Mecanique Physique, Universite Bordeaux, FRANCE

George Hairston, Retired Chairman, Southern Nuclear Operating Company, Inc., Birmingham, AL

Aditya Johri, Professor, Department of Information Sciences & Technology, George Mason University, VA

Mario Letelier, Director, Center for Research in Creativity and Higher Education, University of Santiago de Chile, CHILE

Carolyn W. Meyers, Former President, Jackson State University, Jackson, MS

J.P. Moshen, Past President, American Society of Engineering Education, Associate Dean of Engineering. University of Louisville. KY

**George Peterson**, Executive Director Emeritus, Accreditation Board for Engineering and Technology, Baltimore. MD

Winfred M. Phillips, Senior Vice President and Chief Operating Officer, University of Florida, FL

Karl-Heinz Rau, Professor, Business School, Pforzheim University, GERMANY

**Joseph J. Rencis,** Dean of Engineering, Professor of Mechanical Engineering, Cal Poly, Pomona, CA

Christopher Roberts, President, Auburn University, AL

Sydney Rogers, Executive Director, Alignment, Nashville, TN

Eric Sheppard, Program Director National Science Foundation, Washington DC

Larry J. Shuman, Professor and Associate Dean for Academic Affairs, School of Engineering,
University of Pittshumh, PA

Karl A. Smith, Morse-Alumni distinguished Teaching Professor Emeritus of Civil Engineering, University of Minnesota, MN

Rick Stamper, Provost and VP of Academic Affairs, Rose-Hulman Institute of Technology, IN

Nam P. Suh, Former President, Korea Advanced Institute of Science and Technology (KAIST), KOREA

Phillip C. Wankat, Distinguished Professor Emeritus of Chemical Engineering, Purdue University. IN

**Steve E. Watkins**, Professor of Electrical and Computer Engineering, University of Missouri Rolla, MO