Bethany S. Fralick

Curriculum Vitae

Education

2013	Ph.D., Mechanical Engineering, University of South Carolina Dissertation: Three-dimensional evolution of mechanical percolation in nanocomposites with random microstructures Advisor: Dr. Sarah C. Baxter
2009-2010	Purdue University**,** School of Engineering Education Emphasis: Engineering design as hands on experiences; cognitive flexibility; research in how engineering is best taught, learned, and practiced. Advisor: Dr. Robin S. Adams
2009	M.S., Mechanical Engineering, University of South Carolina Thesis: An investigation of mechanical engineering experimental design processes Advisor: Dr. Jed S. Lyons
2007	B.S., Engineering Management, Manufacturing Specialty, Miami University

Professional Experience

2020-present	Associate Professor of Engineering, Department of Mathematical Sciences Endowed Chair in Engineering Coordinator & Lead Engineering Faculty, Engineering Programs ABET Committee Chair, Engineering Programs University of South Carolina Aiken
2014-2020	Assistant Professor of Engineering, Department of Mathematical Sciences Coordinator & Lead Engineering Faculty, Industrial Process Engineering Program ABET Committee Chair, Industrial Process Engineering University of South Carolina Aiken
2012-2015	Adjunct Faculty, Department of Mechanical Engineering University of South Carolina Columbia
2013	Adjunct Faculty, Division of Natural Sciences and Engineering University of South Carolina Upstate

Teaching Experience

University of South Carolina Aiken 2014-present

Assistant Professor of Engineering, Department of Mathematical Sciences

ELCT 221 Electrical Circuits I, ENCP 101 Intro to Engineering I, ENCP 102 Intro to Engineering II, ENCP 200 Statics, ENCP 260 Mechanics of Solids, ENCP 310 Dynamics, ENCP 290 Thermodynamic Fundamentals, ENCP 301 Introduction to Numerical Methods, ENCP 371 Engineering Materials, ENCP 377 Manufacturing Processes, ENCP 498/499 Capstone Design I & II, MATH 590/591 Senior Capstone I & II

Service & Professional Development

University of South Carolina Aiken

2016-present	ABET Committee Chair, Department of Mathematical Sciences Center of Engaged Learning, Master Teachers Series Magellan Scholar Review Committee Member, USC Aiken Faculty Liaison, USC Salkehatchie PRC Committee Member, Department of Mathematical Sciences

	Engineering Advisory Board Committee Co-Chair
2014-2016	Department Chair Selection Director, Department of Mathematical Sciences
	Faculty Search Committee Chair, Department of Mathematical Sciences
	Faculty Search Committee Member, College of Sciences and Engineering
	Faculty Search Committee Member, Department of Physics and Chemistry
	Curriculum Design for new Industrial Process Engineering Program
	Departmental Course Re-design Committee, Departmental committee
	Engineering Advisory Board Committee Member
	Faculty Mentor, Magellan Scholar, Undergraduate Research Program
	Faculty Mentor, Independent Study Project, Undergraduate Research
	Faculty Mentor, Senior Capstone Project, Undergraduate Research
	Judge, 2015 CSRA Regional Engineering & Science Fair
	Mentor, Introduce a Girl to Engineering day sponsored by Savannah River Nuclear Lab (SRNL) and the Society of Women Engineers (SWE)
	Peer reviewer, ASEE conference papers, Mechanical Engineering Division

Publications

Howe, Melanie; Williams, Austin; Dempsey, Caroline; and Fralick, Bethany (2021). *Creation of a CIP Method for the Heat Exchangers at Rolls-Royce*, Journal of the South Carolina Academy of Science: Vol. 19: Iss. 2, Article 3.

Fralick, B.S. & Koo, R. (2019). Linear differential equations with constant coefficients. *The Mathematical Gazette,* 103(557), 257-264.

Baxter, S.C. & Fralick, B.S. (2016). *Graphical Statics Redux*, presented at ASEE Annual Conference & Exposition, New Orleans, LA, 2016.

Baxter, S. C., Burrows, B. J., & Fralick, B. S. (2016). Mechanical percolation in nanocomposites: Microstructure and micromechanics. *Prob. Eng. Mech*., 44, 35-42.

Baxter, S.C., Johnson, A., & Fralick, B.S. (2015). *Revisiting Graphical Statics*, presented at ASEE Annual Conference & Exposition, Seattle, WA, 2015.

Bourn, R, Fralick, B.S., & Baxter, S.C. (2013). Distributions of Elastic Moduli in mechanically percolating composites. *Probabilistic Engineering Mechanics*, 34, 67-72.

Fralick, B.S., Gatzke, E.P., & Baxter, S.C. (2012). Three-dimensional evolution of mechanical percolation in nanocomposites with random microstructures. *Prob. Eng. Mech.*, 30, 1-8.

Adams, R., & Fralick, B. (2010). *Work in Progress: Identifying Student Conceptions of Design Using a 6 Most and Least Important Assessment Tool.* Paper presented at the ASEE/IEEE Frontiers in Education Conference, Washington, D.C.

Fralick, B., & Lyons, J. (2010). *Student Attitudes Towards Designing Experiments.* Paper presented at the American Society of Engineering Education Annual Conference, Louisville, KY.

Fralick, B., Kearn, J., Thompson, S., & Lyons, J. (2009). How Middle Schoolers Draw Engineers and Scientists. *Journal of Science Education and Technology,* 18(1), 60-73.

Fralick, B. S. (2009). *An Investigation of Mechanical Engineering Experimental Design.* M.S., University of South Carolina, Columbia, SC. (AAT 1467345)

Lyons, J., Fralick, B., & Kearn, J. (2009). *A Survey of Middle-School Students' Attitudes Toward Engineers and Scientists.* Paper presented at the American Society of Engineering Education Annual Conference, Austin, TX.

Memberships
American Society of Engineering Education
American Society of Mechanical Engineering