at Arizona State University we are innovative problem solvers helping to shape the future of engineering education research
poly.engineering.asu.edu

We are here at ASEE 2015. If you see us say hello!
Institute for STEM and Diversity Initiatives

- advocating for and nurturing underrepresented student and faculty success inside and beyond the classroom
- conducting and catalyzing STEM educational research.

IDoTeach

- Secondary school teaching certification option for engineering and computer science majors
- Creating pathways from undergraduate engineering to teaching in the K-12 classroom.

NSF Funded STEM Education Projects

- STEP, WIDER, REU, RET, S-STEM, I^3

http://stem.boisestate.edu

http://idoteach.boisestate.edu/

donnallewellyn@boisestate.edu

noahsalzman@boisestate.edu
Clemson University Engineering & Science Education
PhD and Certificate Programs

• The CU Engineering & Science Education Department offers a unique experience with engineering education research and science education research in one program.

• The ESED learning community provides strong mentoring, colleagues passionate about their research, and engagement with projects encompassing social capital, motivation, mathematical success, retention, self-efficacy, international experiences, and sustainability education.

• Contact ESEGradinquiries@Clemson.edu
We are a transdisciplinary, collaborative group that uses interpretive research methods to investigate diverse aspects of engineering education.

We include students as partners in research projects in a transdisciplinary, dynamic process of mutual learning and shared discovery.

Ask us about:
Georgia Tech’s Center for Education Integrating Science, Mathematics & Computing (CEISMC)

PI: Dr. Marion Usselman

SLIDER integrates project-based inquiry learning and robotics into two middle school physical science unit:

The Accident Challenge: Energy
The Braking Challenge: Force & Motion

Aligns with NGSS
Disciplinary Core Ideas & Practices

Uses engineering challenges to engage and support student earning

Emphasizes evidence-based decision-making and argumentation

Features LEGO robotic kits to drive design and engagement

www.slider.gatech.edu
Research & Curriculum Available at Our Site
PH.D. ENGINEERING - ENGINEERING EDUCATION CONCENTRATION
PH.D. COMPUTATIONAL ANALYSIS AND MODELING

Director:
Katie Evans – Mathematics and Statistics

Associate Directors:
Marisa Orr – Mechanical Engineering
Galen Turner – Mathematics and Statistics

Engineering Education Concentration Director:
Kelly Crittenden – Mechanical Engineering

ISERC Members:
Mitzi Desselles – Psychology and Behavioral Sciences
Jean Gourd – Computer Science, Cyber Engineering
David Hall – Mechanical Engineering
Kathleen Johnston – Physics
Patrick O’Neal – Biomedical Engineering
Michael Swanbom – Mechanical Engineering
Heath Tims – Mechanical Engineering

← Look for us here at ASEE!

U271I Online, open-source homework in engineering
M715 Assessing the Effect of Online Homework on Student Learning in First Circuits Course
T638B Attracting, Developing, and Retaining Diverse Talent in Mechanical Engineering
W429A Student Demographics and Outcomes in Industrial Engineering
Engineering Education @
Centre for Engineering Education (CEE)
Universiti Teknologi Malaysia (UTM)

Activities of CEE
- Rigorous research in engineering education – grants, collaborations, publications, & PhD program
- Training on innovative T&L, and conducting research in engineering education → mentoring champions
- Host conferences, workshops, and Innovative Practices in Higher Education Expo (IPHEX)

Transforming engineering education through innovative evidence-based practices
- Focus on training and research in Engineering Education
- PhD in Engineering Education program
  - Started in 2008
  - Up till now, 13 students completed PhD
  - Current enrolment: 40 students
- Also: Joint PhD in Engineering Education with Aalborg University, Denmark
- Post-doctoral and faculty position available

Contact:
khairiyah@cheme.utm.my
http://tree.utm.my

School of Graduate Studies
www.sps.utm.my

innovative ● entrepreneurial ● global
Center for Engineering Education Research
CEER

- Interdisciplinary DBER focus with
  - Funded STEM education research
  - Expanding MSU EER collaborations
  - Expanding MSU STEM education collaborations
  - Support for outcomes-based engineering education
  - Current and future faculty professional development

Mark Urban-Lurain
Interim Director, CEER
urban@msu.edu
University of Michigan tenured/tenure-track faculty positions in engineering education research to be announced soon!

To be added to an interest list, email eerfaculty@umich.edu
The STEM (Science, Technology, Engineering, & Mathematics) Education Center is dedicated to conducting high quality research and disseminating findings in meaningful ways to influence STEM education on a global scale.

Highlighted Projects

I-Corps™ for Learning
www.asee.org/i-corps-l

EngrTEAMS
www.engrteams.org

STEM Initiatives

Learning and Cognition

P12 Instructor & Curriculum Development

Evaluation and Assessment

STEM Education Doctor of Philosophy (Ph.D.)

This integrated-style program is one of the first in the nation, and is designed to prepare scholars to conduct thoughtful disciplinary and interdisciplinary research in STEM education in order to assume roles as university faculty members, educational leaders, policy makers, and researchers.

Learn more at www.cehd.umn.edu/stem
Department status pending

Success areas:

- Experiential first year program (1650 students)
- Multidisciplinary capstone
- Engineering Technical Communication
- PhD program w/specialization in Eng Education (since 2010)
- Humanitarian Engineering Center

Christy.14@osu.edu
The Leonhard Center for the Enhancement of Engineering Education
Founded in 1990 with a gift from William E. Leonhard

Mission includes:
- Leading and supporting enhancements in undergraduate engineering courses and programs
- Supporting assessment, including ABET
- Leading improvements in communication courses for engineering students
- Preparing graduate and undergraduate teaching assistants
- Conducting externally funded research

Current strategic focus areas:
- Evidence-based strategies to increase engagement
- Enhancing ethics education for graduate and undergraduate students
- Assessment of learning environment
- Enhancing writing skills of undergraduates

For more information, contact Tom Litzinger at TAL2@PSU.EDU or visit www.engr.psu.edu/leonhardcenter/
Advance Engineering Education through Research
The Engineering Education Research Center was
School of Engineering Education

Interdisciplinary Engineering Education Research Laboratory

26 Faculty • 32 Staff • 67 PhD students • 57 PhD graduates • State-of-the-Art Research Lab
Improving engineering education by:

- supporting faculty working to improve student learning and enhance instructional effectiveness
- assisting faculty engaged in educational scholarship and assessment
- facilitating the sharing of ideas and practices within the Institute and the larger educational community,
- promoting faculty development nationwide through the Making Academic Change Happen workshop (MACH)
The UST Center for Engineering Education (CEE) offers:

- a graduate certificate in Engineering Education
- an undergraduate minor in Engineering Education
- professional development workshops

The mission of CEE is to prepare future and current P-12 educators to teach integrated STEM education with an engineering focus.

http://www.stthomas.edu/cee/  
Director: Dr. AnnMarie Thomas apthomas@stthomas.edu
# STEM Education

Master’s & PhD Programs (97 students total)

## Past and Current Research
- UTeach Engineering (NSF-MSP)
- Beyond Blackboards (NSF-ITEST)
- VaNTH (NSF-ERC)
- Teacher Training for Engineering
- IPRO - Programming Standing Up
- Adaptive Expertise in Engineering
- K-12 LEGO Robotics
- Discourse in K-12 engineering teams
- National HS Curriculum Project

## Faculty
- David Allen (Chem Eng)
- Leema Berland (STEM-Ed)
- Richard Crawford (Mech Eng)
- Ken Diller (BioEng)
- Jill Marshall (STEM-Ed)
- Anthony Petrosino (STEM-Ed)
- Catherine Riegle-Crumb (STEM-Ed)
NEW!

COLLABORATIVE PROGRAM IN
ENGINEERING EDUCATION

Students pursue traditional graduate degrees in engineering or education.

Studies are enriched through thesis research and courses in engineering education.

Launching this September:
Offered at the Master’s and Ph.D. levels through the Faculty of Applied Science & Engineering and the Ontario Institute for Studies in Education.

Contact:
PROFESSOR GREG EVANS, greg.evans@utoronto.ca | www.gradstudies.engineering.utoronto.ca
Mission: Improving Education through Engineering

- An interdisciplinary center that includes faculty in engineering, education, child development and computer science.

- Ongoing research in engineering teaching and learning, outreach, and educational technology development.

- Highlighted projects:
  - Novel Engineering: Integrating Engineering and Literacy
  - Interactive Learning and Collaboration Environment (InterLACE)
  - OKEE - Online K-12 Engineering Education program

- Ph.D. and M.S. in Engineering Education (in cooperation with Tufts Department of Education)
Discover Engineering Education

An increasing number of engineers, prepared to meet the challenges of ever-fluctuating changes in technology, are required worldwide. This program is rising to meet the challenge by training the future leaders responsible for designing engineering course pedagogy, curriculum, and leveraging research to improve learning outcomes. Our research-active faculty members are adept at teaching and developing in our graduate students the skills and expertise identified in our mission statement.

Featured Projects

Undergraduate Researcher to present locally and nationally! Christopher Green, an undergraduate research assistant of Dr. Goodridge within the Engineering Education Department, has recently had some of his research work accepted for presentation at the Utah Conference for Undergraduate Research (UCUR) in Provo, National Conferences on Undergraduate Research (NCUR)
Graduates of the program will have the knowledge to:

- Conduct and direct research in engineering education
- Develop, review and critique effective research designs
- Effectively teach engineering subjects
- Design and assess engineering courses
- Address critical issues facing engineering education

Fast Facts:

- Ph.D. began in 2008
- 21 Faculty
- 31 PhD Graduate Students
- 6 NSF Career Awardees
- 1 PECASE Award
- 2 NSF GRFP Awardees

Funding

Generous Funding is available to incoming students and current students with satisfactory degree progress

Application & more information

www.enge.vt.edu
First campus-based center in U.S. to combine research and instructional development missions

CPREE
CONSORTIUM TO PROMOTE REFLECTION IN ENGINEERING EDUCATION

Reflection: Thinking...

...on past experiences

...to inform future action

time

Goals:
1. Cataloguing 120 examples of reflection activities in engineering education across 12 campuses
2. Promoting more reflection in engineering education—18,000 student and 240 educator experiences
Engineering Education Research at Washington State University

• Hands-On Active Learning with Desktop Learning Modules (bvanwie@wsu.edu)
  – B. Van Wie, R. Richards, P. Dutta, D. Thiessen, O. Adesope

• Cataloging and Characterizing Engineering Education Assessments (denny.davis@wsu.edu)
  – D. Davis, H. Davis, M. Trevisan, B. French, J. LeBeau
    http://assess.tidee.org

• Human-centered Environments for Learning and Programming (hundhaus@wsu.edu)
  – C. Hundhausen, R. Zollars
    http://helplab.org/

• Exploring Social Programming Environments in Early Computing Courses (hundhaus@wsu.edu)
  – C. Hundhausen, O. Adesope

[Graph showing % Above Minimal Competency of 7/10]
Engineering Education Community Resource

A web catalog for the international engineering education community, including...

- Degree programs and centers
- Societies, conferences, and journals
- Job listings