EER & STEM Centers and Programs

- Arizona State University
- University of California-Berkeley
- Clemson University
- University of Cincinnati
- University of Georgia
- Georgia Tech
- University of Kentucky
- Linkoping University (Sweden)
- Michigan State University
- University of Michigan
- University of Minnesota
- North Carolina State University
- The Ohio State University
- Pennsylvania State University
- University of Pittsburgh
- Purdue University
- Tufts University
- Universidad de las Americas Puebla (Mexico)
- Universiti Teknologi Malaysia
- University of Texas - Austin
- Uppsala University (Sweden)
- Utah State University
- Virginia Tech
- Washington State University
- University of Washington
- Wichita State University

Arizona State University: Engineering Education Doctoral Program
http://engineeringed.asu.edu
International leadership in engineering and science education through discipline-based education research, preparation of future faculty, and implementation of inclusive, evidence-based curricula

Research Focus Areas:
- Assessment and improvement of problem solving
- Relationships between STEM student motivation and learning
- Student-centered learning environments
- Equity and gender issues in STEM disciplines
- STEM identity development
- Students' academic and career development and success

http://www.clemson.edu/ese/

University of Georgia
http://education.engineering.uga.edu/
The Georgia Tech American Society for Engineering Education Student Section is working to build capacity. They recently held a workshop sponsored by the College of Engineering (COE) and ASEE entitled “Teaching, Scholarship, and Research: Building an Engineering Education Community at Georgia Tech” sponsored by COE and ASEE. Over 60 individuals participated in the day’s events, and the ASEE Student Section is planning similar future events to continue their efforts to improve engineering education and more strongly connect Georgia Tech’s engineering education research community.

Dr. Wendy Newstetter is a cognitive scientist with extensive research experience in engineering education. She is supported by the College of Engineering to work with faculty engineering education research efforts. In Biomedical engineering alone, she has collaborated with faculty on NSF funded efforts through grants REESE, EEC, SES, IRES, CCLI and DUE.

Drs. Donna Llewellyn and Tris Utschig, along with other CETL staff members, encourage, consult, and partner with faculty who become involved in the scholarship and assessment of teaching and learning through individual, program, or grant driven initiatives.

CETL offers a range of support for implementing engineering education research and innovation, from classroom consultations to seminars, project-based fellows programs, and retreats. CETL currently supports engineering education research efforts funded by NSF, the US Dept of Education, the Engineering Information Foundation, the Goizueta Foundation, and others.

**PhD in Engineering Education @**

Regional Centre for Engineering Education (RCEE)

Universiti Teknologi Malaysia (UTM)

**FACTS ON UTM**
- 10 engineering schools
- 2000 tenured academics
- 2,800+ foreign students
- Largest number of engineering alumni in Malaysia
- More than 43% enrolment at graduate levels in engineering and technology in Malaysia

**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, 8 students completed PhD
- Current enrolment: 30 students
- International collaboration and networking
- Post-doctoral and faculty position available

**Contact:**
khairiyah@cheme.utm.my
http://tree.utm.my
The CEER research team includes backgrounds in engineering, other STEM areas, and education.

CEER roles:
• Funded engineering education research
• Collaborate to enhance research in STEM programs at MSU
• Promote, nurture, and encourage outcomes-based education

http://ceer.egr.msu.edu

U. Michigan: Center for Research on Learning and Teaching in Engineering
www.engin.umich.edu/crltengin

Programs to enable research
• SoTL grants for faculty and graduate students
• PhD Certificate in Engineering Education Research
• Networking lunches to expand research initiatives
• Faculty learning community around large course teaching

Ongoing research initiatives
• Faculty motivation to adopt effective teaching practices
• Impact of screencast technology on student perceptions and performance
• Strategies for innovative design practice and their translation to education
• Ethical development of engineering undergraduates
University of Minnesota
STEM Education Center
http://www.cehd.umn.edu/STEM/

The Ohio State University
Engineering Education Innovation Center
http://eeic.osu.edu/about
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:
- Cross-national teams in capstone courses
- Integration of creative process into engineering courses
- Ethics education for first year students
- Technology-enhanced learning

For more information, contact Tom Litzinger at TAL2@PSU.EDU or visit www.engr.psu.edu/leonhardcenter/
GOALS

- Conduct world-class research on teaching and learning of science, engineering and technology
  - Scholarship of discovery
- Use the results of that research to continually improve instruction at UDLAP, Mexico and other Ibero-American countries to better support the learning process of our students
  - Scholarship of application, integration, and teaching
- Support the educational needs of science, engineering and technology teachers and learners at the P-12, University, and continuing professional development levels
  - Scholarship of application, integration, and teaching

- Fall 2003
  - Center for Science, Engineering, and Technology Education
- Fall 2006
  - PhD program
- Spring 2008
  - program accredited by the National Council of Science and Technology (CONACYT) of Mexico
- Fall 2009
  - first graduate
- Fall 2010
  - ≈ 40 PhD students

Purdue University
https://engineering.purdue.edu/ENE/Academics/Graduate/Doctorate/index.html
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)

Tufts Center for Engineering Education and Outreach

Engineering Education Research

Improving Education through Engineering
- Research in engineering teaching and learning, outreach, and educational technology development.
- Current projects:
  - Integrating Engineering and Literacy (IEL)
  - Design Compass: How people design

- Interactive Learning and Collaboration Environment (InterLACE)
- LEGO Robotics: Catalyzing Social Communication in Students with Autism
- W-STOMP Women in Engineering

Tufts Department of Education

Engineering Education M.S. & Ph.D. Program
- Develop research on how students (K-College) learn/engage in engineering
- Interdisciplinary thesis committee (at least 1 education and 1 engineering professor)

http://ceeo.tufts.edu/
Utah State University
http://www.engineering.usu.edu/htm/information/phd-engineering-education

Virginia Tech
http://www.enge.vt.edu/
University of Washington

http://www.hcde.washington.edu/nav-prog-advise/phd

Center for Engineering Learning and Teaching

Founded in 1998, CELT is First Campus-Based Center in U.S. to Combine Research and Faculty Development Missions.
Engineering Education Research Center

- Six faculty in College of Engineering and Architecture who focus on engineering education
- About 20 active engineering education graduate students
- Students receive engineering degrees
- Research areas include conceptual change and epistemology, human computer interactions, adoption of innovations, assessment of design skills, problem-based learning, and collective intelligence in design

http://eerc.wsu.edu/

http://tinyurl.com/engredu