

EER & STEM Centers and Programs

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ARIZONA STATE UNIVERSITY

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ENGINEERING EDUCATION PhD

No profession unites the spirit of innovation like engineering. The Doctor of Philosophy in Curriculum and Instruction with a concentration in Engineering Education prepares the next generation of thought leaders and experts to devise improved strategies for engineering teaching and learning across the education spectrum. A collaborative of the Mary Lou Fulton Teachers College and the Ira A. Fulton Schools of Engineering, ASU's PhD program in Engineering Education provides students a multidisciplinary academic experience that bridges fundamental research and best practices to improve learning.

Graduates of the program emerge with the knowledge and abilities needed to succeed in the global engineering community of the 21st century as they pursue careers in academia, industry, government and policy, foundations or within P-16 systems, as engineering faculty members, outreach directors, corporate trainers, or assessment specialists.

ADMISSION & PROGRAM INFORMATION

Admission requirements:

- Minimum grade point average of 3.0 (on a 4.0 scale) is required for graduates of accredited United States institutions
- Current score on the general Graduate Record Examination (GRE)
- Three letters of recommendation
- Statement of academic and career objectives
- Curriculum vita and writing sample

Please review the [Engineering Education Program Guide](#) and visit the [ASU Graduate College website](#) for more detailed information regarding admission requirements and how to apply.

APPLICATION DEADLINE:

- Applications are accepted only for Fall admission.
- Admissions for Fall 2010 are now closed. Application deadline for Fall 2011 will be announced soon.

PROGRAM DOCUMENTS

- [Engineering Education Program Guide](#)
- [Curriculum & Instruction PhD Handbook](#)

CONTACT US

Trishalegram O. Gantsev, PhD
Program Coordinator & Assistant Professor



Discover **ENGINEERING**, foster engineering habits of mind; **ENHANCE** K-12 STEM education; retain undergraduate engineering students; **ENCOURAGE** mathematical thinking, systems thinking, **CREATIVITY, OPTIMISM, COLLABORATION, COMMUNICATION, ETHICAL** considerations research, innovation, scholarship of teaching and learning engineering; address the **GRAND CHALLENGES** of our time

Arizona State University: Engineering Education Doctoral Program
<http://engineeringed.asu.edu>

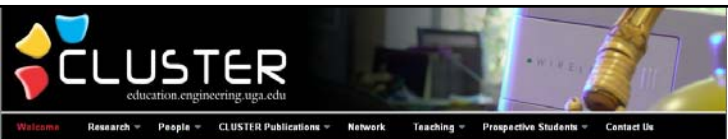


International leadership in engineering and science education through discipline-based education research, preparation of future faculty, and implementation of inclusive, evidence-based curricula

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/>



CLUSTER
education.engineering.uga.edu

Welcome Research People CLUSTER Publications Network Teaching Prospective Students Contact Us

CLUSTER at work ...

Welcome

The engineering education research CLUSTER (Collaborative Lounge for Understanding Society and Technology) led by Dr. Nadia Kellam and Dr. Joachim Walther is a trans-disciplinary, collaborative group at the University of Georgia that focuses on engineering education research.

We use interpretive research methods to investigate diverse aspects of this exciting, young field and build on the results of this research to push the boundaries and transform engineering curricular and teaching practice in our engineering programs.

Our work in engineering education research, which includes students as partners in research projects, is based on an enjoyable, supportive and personally meaningful environment that emerges from our trans-disciplinary, dynamic process of mutual learning and shared discovery.

CLUSTER researcher wins NSF CAREER award

Dr. Joachim Walther will investigate research quality in interpretive engineering inquiries. This engineering education research initiation grant seeks to combine elements of the total quality management (TQM) movement from engineering with a framework for evaluating qualitative research that will be...

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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>






School of Graduate Studies

www.sps.utm.my

innovative • entrepreneurial • global



Center for Engineering
Education Research
@ Michigan State University

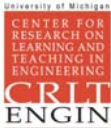
MICHIGAN STATE
UNIVERSITY

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>



**CRT
ENGIN**

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



STEM Education Center CEHD | College of Education + Human Development

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STEM Education Center
 University of Minnesota
 300 Learning & Development Sciences
 (University Village)
 1900 Red Oak Ave., 1000
 St. Paul, MN 55108
 Phone: 612-625-1701
 Fax: 612-625-0951

STEM Education Center Research

Findings & Publications

The Center is focusing on four main areas of STEM education:

1. STEM integration
2. Learning and cognition
3. Research on instructor preparation
4. Evaluation and assessment

STEM Integration


The first focus of the Center is STEM Integration. STEM Integration is the merging of the disciplines of science, technology, engineering, and mathematics in order to: deepen student understanding of each discipline by contextualizing concepts, broaden student understanding of STEM disciplines through exposure to socially and culturally relevant STEM contexts, and increase interest in STEM disciplines to broaden the pipeline of students entering the STEM field.

The needs that guide the Center's research agenda around STEM Integration are as follows:

- Students need rich and engaging learning experiences that foster deep content understanding in STEM disciplines and their intersections.
- Most teachers have not learned disciplinary content using STEM contexts, nor have they taught in this manner, and therefore new models of teaching must be developed if STEM integration is to lead to meaningful STEM learning; and
- There is a need for curricula that integrate STEM contents to teach disciplinary content in meaningful ways that go beyond the blending of traditional types of understandings.

Learning and Cognition

University of Minnesota
STEM Education Center
<http://www.cehd.umn.edu/STEM/>



Ohio State University: College of Engineering and College of Education and Human Ecology
 Contact: Robert J. Gustafson (Engineering) Gustafson.4@osu.edu or Paul E. Post (Education) post.1@osu.edu

Guide for New Ph.D. Students in ENGINEERING EDUCATION

The Doctoral Program in Engineering Education is designed to help develop the highest levels of professional competence in technology and engineering education and to develop the capacity to contribute knowledge into their field. At Ohio State, doctoral degree programs consist of a coherent pattern of courses and other educational experiences, a candidacy examination, a dissertation, and a final oral examination.

Program content is selected to fit the individual student's background, experience, and professional goals. Students admitted to the program will be assigned initial faculty advisers who will provide guidance as they begin the program. Students have the option of choosing new advisers as their program evolves. This document serves as a resource to be used by the student and adviser in developing the individualized program. The adviser and the Ph.D. Advisory Committee retain the right to substitute other courses as appropriate. The program is approved by the student's Ph.D. Advisory Committee and is subject to the rules of the Graduate School and school's Graduate Studies Committee.

ADVISORY COMMITTEE

After the second quarter of enrollment, the student and their advisor will choose an advisory committee consisting of four professors, a minimum of two of whom shall be members of the STEM Area of Study. The student will plan the doctoral program in consultation with this committee. This committee also will be responsible for developing and assessing the Candidacy Examination. Upon completion of the examination, the student may reorganize the committee to reflect the expertise needed for the dissertation.

PROGRAM OF STUDY

Students should develop a tentative program plan with their faculty advisers during the first year. This plan will be reviewed during the second year for revision or continuation. A copy of the final, approved program plan should be submitted to the Office of Academic Services prior to the Candidacy Exam. The program of study should include the following categories:

Learning, Teaching, and Social Context Component - 15 hours

Edu T&L 721	Logic and Psychology in School Science/Mathematics, or equivalent
Edu T&L 975	Theoretical Perspectives on Learning, Teaching and Social Contexts

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/



Tom Litzinger, Center Director



Sarah Zappe, Director
Assessment & Instructional Support



Michael Alley
Engineering Communications



my.pitt Swanson School of Engineering Contact Us

ENGINEERING EDUCATION RESEARCH CENTER

A Center of the Swanson School of Engineering

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Upcoming Events

[+ REGISTER](#)

Using Model Eliciting Activities (MEAs) in the Engineering Classrooms
07-19-12 | 08:30 am | 102 Benedum Hall, University of Pittsburgh
This workshop will provide engineering faculty with the ability to adapt or develop, implement, and assess Model Eliciting Activities (MEAs) in the upper division engineer classrooms. Participants will learn the theoretical basis for the MEAs, how to best implement MEAs within a course, as well as assessing the effectiveness of the MEAs.
... [Learn more](#)



[+ REGISTER](#)

Teaching Workshop
08-21-12 | 08:00 am |

University of Pittsburgh
<http://www.engineering.pitt.edu/eerc/>

Universidad de las Américas Puebla
Mexico


Doctoral Program in
Science,
Engineering, and
Technology
Education

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*


Universidad de las Américas Puebla



- **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

Mexican private institution of higher learning

- accredited in the US since 1959 by SACS



PURDUE UNIVERSITY

School of Engineering Education

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Academics

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Academics

Doctoral Program in Engineering Education

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Purdue has been a pioneerhouse for educating engineers for more than 150 years, but the scholarly study of how best to educate engineers has emerged in just the past few decades. Determined to lead in the discipline, in 2004 Purdue established the Department, now School, of Engineering Education (ENE), the world's first such academic unit, and, along with it, the world's first engineering education doctoral program.

In ENE, an enthusiastic and committed community of scholars provides ongoing national leadership in building the discipline's intellectual framework (e.g., through the NSF-sponsored [Engineering Education Research Collaborative](#)), [Faculty](#) and [doctoral students](#) work collaboratively across the entire educational continuum (preschool through college, extending into the workplace) to develop a [research base](#) for guiding engineering education practice, developing curricula, assessing how students learn, and moving those findings into the classrooms of tomorrow's engineers.

- [ENE PhD Admissions Information](#)
 - [ENE PhD academic requirements](#)
 - [ENE PhD student achievement roadmap \(pdf\)](#)
 - [ENE PhD competencies](#)
 - [ENE PhD course descriptions](#)
- [Why study engineering education at Purdue?](#)
 - [Purdue Graduate School](#)
 - [Purdue Graduate School fellowship and grant information](#)
 - [Employment opportunities at Purdue](#)
- [Find out more about awards in the ENE PhD program](#)
 - [ENE Student testimonials](#)
 - [ENE careers and alumni](#)
- [For more information](#)

Why study engineering education at Purdue?

National reputation: In ENE, graduate students, and doctoral program as agents of change. The American Society of Engineering Education, the National Academy of Engineering, the National Science Foundation, and others have recognized the School of Engineering Education (ENE)'s leadership, honored our scholarship, and/or funded our research.

Living laboratories: In conducting your research, including ENE's [Early Career Engineering Program](#), [Multidisciplinary Engineering Program](#), [Institute for P-12 Engineering Research and Learning \(IPEL\)](#), and the [Engineering Practices & Community Service program \(EPCS\)](#).

Flexible programs: to accommodate your personal interests, background, and career aspirations. Our program draws from many disciplines, and we actively seek students across a range of academic interests and life experiences.

ENE seminar series: Learn what your colleagues at Purdue and beyond are doing to define and further engineering education research—and add your own contributions to the mix. [Weekly announcements](#), foster community building and provide opportunities for professional development.

Culture of innovation: In ENE, we share a palpable sense of mission for bettering engineering education and shaping the future of this developing discipline. That means we're out in front—on campus, regionally, and nationally—developing new approaches to education and research.


Collaboration, inclusive environment: ENE attracts faculty and students from across the country and around the world into a welcoming and supportive community.

Graduate Programs


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Purdue University

<https://engineering.purdue.edu/ENE/Academics/Graduate/Doctorate/index.html>



THE UNIVERSITY OF
TEXAS
— AT AUSTIN —




The College of
EDUCATION

STEM Education

Master's & PhD Programs (97 students total)

<p><u>Past and Current Research</u></p> <ul style="list-style-type: none"> 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 	<p><u>Faculty</u></p> <ul style="list-style-type: none"> 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)
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Tufts
UNIVERSITY

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

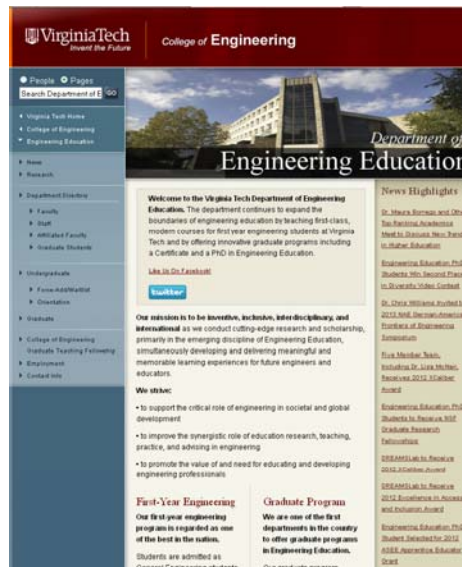
- Develop research on how students (K-College) learn/engage in engineering
- Interdisciplinary thesis committee (at least 1 education and 1 engineering professor)

<http://ceeo.tufts.edu/>



Utah State University

<http://www.engineering.usu.edu/html/information/phd-engineering-education>



Virginia Tech

<http://www.engr.vt.edu/>

HUMAN CENTERED DESIGN & ENGINEERING
UNIVERSITY of WASHINGTON

Home » Programs and Advising » PhD

PhD

The PhD in Human Centered Design & Engineering (HCDE) at the University of Washington provides unparalleled depth and experience for students interested in studying the conception, design, implementation, usability, and evaluation of technologies for specific audiences or user groups. In addition to learning through relevant and contemporary coursework, students work closely with faculty on real-world projects and research questions.

HCDE PhD students work with award-winning faculty on directed research projects, often taking a leadership role in these small teams. Research topics are updated quarterly, often focused around grant-funded projects sponsored by regional and national agencies such as NSF and NIH. Research groups have addressed a range of topics including:

- Visualizations to support organizational analysis
- Virtual workspaces
- Technology for health and wellness
- Internet based research
- Human-robot interaction
- Engineering education
- Digital games
- Design for digital inclusion
- Computer supported collaboration

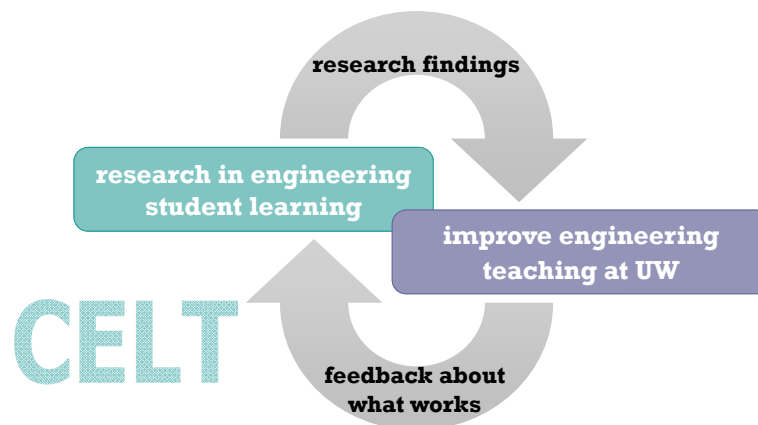
Located in Seattle, the University of Washington has a beautiful campus in the heart of the city. HCDE is housed in the College of Engineering, and benefits from the research tradition of a leading R1 institution. Graduates are prepared to be national and international leaders in the field, securing jobs both in academia and industry. You can access our FAQ here.

University of Washington | Graduate | Info | News
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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/>

Engineering Education Departments and Programs (Graduate)

last edited by [Blair Douglas](#) 2 months, 3 weeks ago

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Engineering/STEM Education Graduate Programs

Institution	Program	Degree Awarded
Arizona State University	Ira A. Fulton Schools College	U.S. Educational Technology Ph.D. in Curriculum and Instruction with concentration in Engineering Education M.Ed. EdS Ph.D. in Educational Technology Ph.D. in Educational Technology with concentration in Learning and Engineering
	Ira A. Fulton School of Engineering	Ph.D. in Science, Technology, Engineering and Mathematics Education Ph.D. in Educational Engineering with concentration in Engineering Education
University of California - Berkeley	Studies in Engineering, Science, and Mathematics (SESM) Education	U.S. Technology, Science or Math Education Ph.D. Technology, Science or Math Education
Chalmers University of Technology (Sweden)	Department of Applied Information Technology	Licentiate Engineering Education Research Ph.D. Engineering Education Research
University of Cincinnati	School of Engineering Education (SEE)	
Claremont University	Department of Engineering and Science Education	Ph.D. Engineering or Science Education
University of Kentucky	College of Education - Department of Science, Technology, Engineering and Mathematics	Ph.D. Science, Technology, Engineering and Mathematics Education
Lehigh University (Leiden)	Engineering Education Research Group	Ph.D. Engineering Education Research
The College of New Jersey	School of Engineering - Department of Technological Studies	U.S.T. in Secondary Education - Technology Education
Ryerson University	College of Education	U.S. EdS Math, Science, and Technology Education
North Carolina State University	College of Education - Department of Science, Technology, Engineering and Mathematics Education	U.S. and U.S. Program in Technology Education Ed.D. Program in Technology Education
Pittsburg State University	Charles College of Education - Department of STEM Education & Pedagogical Studies	U.S. Engineering - Modeling and Simulation

<http://tinyurl.com/engredu>