

UTSA[®]

Engineering and Integrated Design

Announcing a set of complementary graduate certificates in Engineering Education and a future Engineering Education master's degree to be taught by nationally recognized PhD faculty who are experts in the field- bringing both experiences from careers as engineers and as teachers in K-12 and higher ed. These programs are targeted for both engineering students wishing to prepare as future engineering instructors in a college or university and for teachers in the field (or future teachers) interested in preparing to teach engineering at the middle and high school level in formal and informal educational settings. Please contact Program Director: Dr. Araceli Martinez Ortiz for more information. Email: Araceli.Ortiz@UTSA.edu

Graduate Certificate Engineering Education

Register for Spring Classes Now!

The Engineering Education Certificate consists of a 9 credit hour curriculum with emphasis on engineering curriculum development, instruction and assessment methods to support student learning outcomes. It covers history and attributes of different engineering fields. The proposed program also promotes the integration of mathematics and science in the context of engineering. It provides a training platform for those educators who plan to teach engineering or pre-engineering subjects. This unique program also allows for the collaboration of students and faculty from the College of Engineering and Integrated Design & the College of Education and Human Development.

Required Courses

EGR 6973/ CI 6973 Special Problems: Becoming an Engineering Educator (3)
EGR 6183 Engineering Education Methods (3); EGR 6283 Mentored Teaching in Engineering (3)

Graduate Certificate Career Tech & Engineering Teaching

Register for Spring Classes Now!

The Career Technology and Engineering Teaching (CTET) Certificate provides an opportunity to create a certification pathway for teachers who wish to become Career Technical Education (CTE) educators to teach dual credit engineering courses in high schools or community colleges. The Texas Education Agency's CTE certificate requires completion of 18 credit hours of engineering courses. This certificate requires 9 SCH of Engineering coursework. In combination with the Engineering Education Certificate, this proposed CTET certificate will satisfy the required 18 semester credit hours for demonstrating expertise in engineering and eligibility to teach dual credit courses.

Students may select from more than 50 engineering courses from the Departments of Biomedical and Chemical Engineering, Electrical and Computer Engineering, Mechanical Engineering and the School of Civil and Environmental Engineering and Construction Management.

Master of Science (M.S.) Engineering Education

Proposed Program:
Fall' 2022

The Master of Science (M.S.) degree program in Engineering Education

The proposed joint M.S. graduate degree program provides a platform for students to expand their teaching skills and to distinguish themselves as specialists in this growing field of engineering education. It also fosters research and grant proposal skills allowing graduates to work on large multi-institutional research initiatives and grant proposals that address goals and objectives related to engineering education. This program prepares teachers, school districts, and community colleges to reach populations that have been traditionally marginalized. Students will be offered a unique program of courses including a focus on Texas essential knowledge and skills and a variety of electives to allow for deeper technical and pedagogical preparation. Students will have the opportunity to learn from experts in the fields of Engineering Education, Engineering and Education.

The M.S. program in Engineering Education requires 30 student credit hours (SCH). The program will grant credits for most of the core and many of the elective credits earned through the graduate certificates as part of the 30 SCHs. Courses will be offered in various modes and times to allow as much flexibility as possible for working professionals who seek to advance their skills while continuing their careers.

Stand-out Among Your Peers by Earning a **Graduate Certificate in Engineering Education**

Courses available for Spring Semester Registration!

Engineering Graduate Students:

- Prepare to teach engineering courses more effectively by learning fundamental theories about how people learn.
- Explore engineering curriculum development, instruction, and assessment methods to support student learning outcomes.
- Practice and gain confidence in your teaching approach with the guidance of an experienced instructor & mentor.

Education Graduate Students:

- Enhance your technical and engineering background to prepare to teach high school engineering courses more effectively.
- Explore existing resources in engineering curriculum and assessment methods to support student learning outcomes.
- Practice and gain confidence in your teaching approach in both formal and informal settings with the guidance of an experienced instructor & mentor.



EGR 6973 (or CI 6973)- Special Problems: Becoming an Engineering Educator (NEW) (3 SCH) –Monday, Online Synchronous: 6:00pm- 8:45pm

An organized course offering the opportunity for specialized study in engineering education for instructors in either a college/university setting or a K-12 educational classroom. Covers theoretical foundations of engineering curriculum design and a culturally responsive teaching framework for teaching engineering content and using engineering design as the impetus for student learning of associated science & mathematics. Orientation will be provided to enhance other valuable skills for engineering educators such as writing proposals, managing active learning classrooms,

and developing teaching methods to enable diverse student learning.

Instructor: Dr. Araceli Martinez Ortiz



EGR 6453 Engineering for Inclusiveness and Social Justice (NEW) (3 SCH) Wednesday, Online Synchronous: 6:00pm- 8:45pm

This course examines the role of engineers in society, the complexity of sociotechnical challenges, the importance of diversity and inclusion in spaces where engineering is practiced, and the ways in which engineering can be used as a vehicle to rectify injustices created by engineered designs and artifacts. The course also provides the tools to critically analyze engineering systems, challenge dominant engineering discourses, increase an awareness of diversity, equity and inclusion, and reshape the practice of engineering.

Instructor: Dr. Alejandro Mejia, alex.mejia@utsa.edu