

# Online Master of Science in Engineering Education

The online master's program covers both the theory and the practice of engineering education and is designed to be valuable to four different audiences:

1. Ph.D. students in engineering or a closely related field who are preparing for a faculty career,
2. Current engineering or science faculty members who would like to become more effective teachers,
3. Mid-career scientists and engineers who are considering a second career teaching at a college or university, and
4. Industry professionals, consultants, and others seeking continuing professional development and additional qualifications to support technical training and education.

Purdue University's School of Engineering Education (ENE) is the world's first such academic unit, originally designed for Ph.D. students who wish to pursue *rigorous research* in how engineering is best taught, learned, and practiced. The online Master's Degree in Engineering Education has been added for those who want to understand both the underlying theory and the practical applications of engineering education research but are not currently planning to pursue a Ph.D. The online master's program is offered through [Purdue Graduate Engineering Online](#), which is ranked among the top three by US News & World Report.

For those interested in a shorter graduate program, Engineering Education offers an [online graduate certificate](#) entitled ***Teaching and Learning in Engineering***. Courses in the graduate certificate can be counted toward the MS in Engineering Education if the student subsequently decides to pursue the master's degree.

Some students in the master's program may ultimately decide to pursue a Ph.D. in Engineering Education. The master's program is designed so that most, if not all, of the MS courses would count toward the Ph.D.

## Online MS ENE Degree Requirements

Applicants are expected to hold at least a baccalaureate degree in engineering or very closely related field.

The 30-credit hour online non-thesis Master's Degree curriculum has been carefully designed to provide the same high-quality content as the on-campus courses and is taught by the same faculty as the on-campus courses. The online courses offer multiple opportunities for online students to interact with and receive feedback from both the faculty members and other students in the course.

Students pursuing the MS ENE online will be expected to complete 15 credit hours of required courses, 15 credit hours of electives (with some restrictions), and a portfolio – as described below.

### **Required Courses for the Non-thesis MS ENE Online (15 credit hours)**

- ENE 50101 Foundations of Engineering Education – 3 credit hours
- ENE 50200 History and Philosophy of Engineering Education – 3 credit hours
- ENE 50300 Engineering Education Inquiry – 3 credit hours
- ENE 50500 Theories of Development in Engineering Thinking – 3 credit hours **or** ENE 50400 Leadership, Policy and Change in STEM Education – 3 credit hours
- ENE 50600 Content, Assessment and Pedagogy\* – 3 credit hours
- ENE 69000 Seminar – 0 credit hours – must be taken twice

\*Included in the Teaching and Learning in Engineering Graduate Certificate

NOTE: All six required courses listed above will count toward the Ph.D. in Engineering Education should the student decide to pursue that degree.

### **Electives for the Non-thesis MS ENE Online (15 credit hours)**

For the non-thesis MS ENE, the student is required to take 15 additional credit hours of elective specialization courses comprised of appropriate graduate level coursework in ENE and/or other programs. The elective specialization must be coherent, thematic, and named accordingly, with approval by the student's academic advisor. The elective courses for the online MS ENE fall into two groups -- at least 6 credit hours to be selected from a specified group of ENE courses plus 9 additional credit hours which will be determined in consultation with (and require approval of) the advisor. Selection of those 9 credit hours will be based, in part, on the student's previous degrees and future plans.

**At least 6 credit hours** from the following list

- ENE 50400 Leadership, Policy and Change in STEM Education - 3 credit hours **or** ENE 50500 Theories of Development in Engineering Thinking – 3 credit hours
- ENE 54400 Globalization and Engineering – 3 credit hours

- ENE 59500 Exploring Alternative Career Paths as an Engineering Educator\*\* – 3 credit hours
- ENE 62000 Design Cognition and Learning – 3 credit hours
- ENE 68500 Engineering Education Methods\*\* – 3 credit hours
- ENE 68700 Mentored Teaching\*\* – 1 credit hour
- ENE 69500 Succeeding as an Engineering Professor\*\* – 3 credit hours

\*\*Included in the Teaching and Learning in Engineering Graduate Certificate

**Plus 9 additional credit hours** as indicated below

Students holding a bachelor's but not a master's degree in an engineering field must take 6 credit hours of a coherent sequence of graduate courses (500 or 600 level) in an engineering field other than engineering education plus three additional credit hours of electives with approval of the advisor.

Students holding a master's degree in an engineering field will, in consultation with and the approval of the advisor, select 9 credit hours of courses that best serve the student's needs.

Students planning to pursue a Ph.D. in Engineering Education following the master's degree may want to consider the following courses that also meet the requirements of the Ph.D. program.

- 3 hours of research methods (qualitative analysis) from Engineering Education or another appropriate department (e.g. EDCI 61500 and 61600)
- 3 hours of research methods (quantitative analysis) from Engineering Education or another appropriate department (e.g. EDPS 55600 and 55700)
- 3 hours of social science statistical methods (e.g. PSY 60000 or 61000)

## Portfolio Requirement

All MS ENE students must complete a portfolio of artifacts to demonstrate suitable coverage of engineering education graduate competencies. The list of [10 competencies](#) is identical to what is specified for the ENE Ph.D. program – except that, due to the shorter duration of the program, master's degree students are required to document at least 6 of the 10 competencies.

## Applying for the Online Master's in Engineering Education (MS ENE)

Applicants will complete an application to Graduate School at Purdue and select as the degree objective the Online Master's Degree in Engineering Education. The application package will require:

1. Application form
2. Transcripts
3. Resume or CV
4. Statement of purpose
5. Teaching statement
6. TOEFL or other measure of English proficiency – if required
7. Two or more reference letters

## Application Deadlines

Students are admitted to the online MS ENE program in either fall or spring semester. The deadline for applications for those interested in enrolling in fall is April 15. For those wanting to enroll in Spring, the application deadline is December 1.

## For More Information

Questions about the online MS ENE may be addressed to

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