Electrical and computer engineering graduate students at the University of Houston have the opportunity to work with and learn from faculty recognized as world leaders in their fields. These include Fellows of the IEEE and the National Academy of Inventors, multiple NSF CAREER Award winners, and investigators in major research projects supported by NASA, DARPA, NIH, ARPA-E and the NSF.

ECE graduate students can also take full advantage of the college’s location in Houston. Many department researchers work closely with firms in the energy industry, allowing them to address the sector’s most pressing needs. Faculty also have ongoing collaborations with physicians and researchers at Texas Medical Center institutions, enabling them to bring advances from the lab to the clinic as quickly as possible.

Regardless of their career objectives – whether obtaining an R&D post in academia or expanding their skillset for work as a practicing engineer – students can take advantage of these opportunities thanks to the different degree plans offered by the department.

### Doctor of Philosophy in Electrical Engineering (Ph.D.)

The Ph.D. is a research-intensive degree that prepares students for a research and development career in industry or academia. Given the research focus of the Ph.D., applicants must have a deep affinity for their research topic and be fully committed to completing their degree and contributing to their discipline.

There are two paths to the Ph.D.:

1. Directly from B.S. to Ph.D., bypassing the M.S. degree, which is recommended for motivated, top-performing candidates with a clear idea of what they want to accomplish in their field of study.
2. Obtaining a M.S. degree (at UH or elsewhere) prior to Ph.D. studies. This is recommended for students
who are still forming a clear vision of their future career objectives.

**Master of Science in Electrical Engineering (MSEE, with thesis)**

The Master of Science (MSEE) degree is a research-oriented degree and requires the completion of a thesis that describes the results of research conducted under the guidance of a faculty advisor. This is a good option for students who haven’t yet decided if they want to pursue an R&D career and/or aren’t set on their exact area of study. As such, it is very important that students select an advisor as soon as possible, ideally prior to beginning the program.

**Master of Science in Electrical Engineering (MSEE, Non-thesis option)**

The Master of Science in Electrical Engineering (MSEE) non-thesis master’s program provides advanced instruction emphasizing engineering practice, making it well suited for practicing engineers who want to grow their knowledge and skillset but aren’t necessarily pursuing a career in R&D. In fact, the MEE program can be counted as one year’s experience towards registration as a Professional Engineer.

The program focuses on electrical engineering design, systems operation, manufacturing, and management. Students may specialize in one of four areas of strength in the Department of Electrical and Computer Engineering. These areas are: Control and Power Systems, Electromagnetics and Microelectronics, Electronics and Computers, and Signals and Communications. Under the guidance of a faculty member, students may complete the MSEE with a capstone project focusing on a practical engineering problem.

In addition, students can select electives outside the electrical and computer engineering department. Options include courses in other Cullen College departments, the College of Business Administration, and the College of Natural Sciences and Mathematics. This flexibility allows students to design a degree program that best matches their goals for the future.

Although the thesis and non-thesis programs are open to both part-time and full-time students, part-time students and working engineers typically find the non-thesis program is the better fit. Students who do not wish to pursue a degree can take individual classes as a Post Baccalaureate (PB) student.

**Certificate in Power and Energy Systems (PES)**

The Department of Electrical and Computer Engineering (ECE) of the University of Houston offers two Graduate Certificate programs in Power and Energy Systems.

1. Power Electronics and Renewable Energy Technologies: This program focuses on power electronics, electric machines, adjustable drive systems, and renewable energy technologies

2. Power Systems and Smart Grid: This program focuses on the advanced courses related to power systems, smart grid, and power system protection.

The courses offered are relevant to the industries such as oil and gas, power industries, utilities, and renewable energy. The program provides advanced instruction to give individuals the level of technical and business expertise needed to meet the increased industry demand for highly skilled professionals. The time to complete each certificate will be one year.
The courses will be taught by the ECE power faculty and industry experts located in Houston. To provide the most flexibility for working professionals, all courses of the certification programs will be offered in the evenings as well as online.

More details can be found [here](#).

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**Master of Computer and Systems Engineering (MSCSE)**

The Computer and Systems Engineering (CSE) degree is a graduate level, interdisciplinary program administered by the Department of Electrical and Computer Engineering that provides specialization in Computer Engineering.

Applicants can have a B.S. in any one of the following fields: Electrical Engineering, Computer Engineering, Computer Science or a degree in any engineering field or Quantitative Science. Depending on previous background, a set of prerequisites might have to be satisfied before the student starts the graduate program in CSE. A student can complete the degree on a full or part time basis and has the option of doing a thesis or not. A full description of the [CSE Program Requirements](#) can be found here.

Detailed information on the application process can be found in the [Application Procedures](#) section of the website.

Prospective students can get academic advising from zhan2 [at] central [dot] uh [dot] edu (Dr. Zhu Han) by making an appointment or contact the Graduate Admissions Advisor at ece_grad_admit [at] uh [dot] edu.

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**Master of Science in Computer & Systems Engineering (MSCSE) Program**

To receive the degree of Master of Science, the student is required to complete (on a part-time or full-time basis), with a grade point average of at least 3.0, a minimum of 30 semester credit hours for the non-thesis option or a minimum of 30 semester hours for the thesis option. Upon admission to the program, the student will meet with the Director of the CSE Program to develop a plan that involves any required prerequisite courses as well as the appropriate courses for the degree plan. If the student follows the thesis option he/she will be advised to find an advisor who will supervise and direct his/her research. The thesis advisor will subsequently advise the student about his/her degree plan.

1. **Non-thesis Option:**

   - A student that follows the non-thesis option should complete a minimum of 30 semester credit hours of coursework (10 courses).
   - Four of these courses should be from the List of Required ECE Courses while the remaining can be from the List of Suggested Elective ECE courses.
   - A minimum of six courses should be from the Department of Electrical & Computer Engineering.
   - A maximum of four courses can be from outside the ECE department. These courses must be from the Department of Computer Science, College of Engineering, or College of Business Administration. No
courses from the College of Technology can be used on the Degree Plan.

Before graduation the student's degree plan will have to be approved by the ECE Academic Advisor and the Director of the Computer and Systems Engineering Program.

2. Thesis Option:

- A student who follows the thesis option should complete a minimum of 30 semester hours (10 courses).
- A minimum of 21 semester credit hours of coursework (7 courses)
- Four of these courses should be from the List of Required ECE Courses
- Six hours of thesis (ECE 6399 and ECE 7399) and
- Three hours of research (ECE 6398)

Before graduation the student's degree plan will have to be approved by the thesis advisor, the ECE Academic Advisor, and the Director of the Computer and Systems Engineering Program.

List of Required ECE Courses

Choose 4 courses from the following required course list:

ECE 6370 Advanced Digital Design
ECE 6346 VLSI Design
ECE 6373 Advanced Computer Architecture
ECE 7373 Advanced Topics in Computer Architecture
ECE 6371 Fundamental Hardware Design
ECE 6372 Advanced Hardware Design
ECE 6328 CMOS Analog Integrate Circuits
ECE 6321 Principles of Internetworking

To satisfy the coursework requirements and form a meaningful coherent program of study, a student may choose the remaining ECE courses from the following list of Approved ECE Elective Courses.

List of Approved ECE Elective Courses

ECE 6313 Neural Networks
ECE 6315 Neural Computation
ECE 6316 Computational and Biological Vision
ECE 6321 Principles of Internetworking
ECE 6322 Introduction to Spread Spectrum Communications
ECE 6323 Optical Fiber Communications
ECE 6324 Digital Telephony
ECE 6328 CMOS analog ICs
ECE 6325 State Space Control systems
ECE 6330 Mobile Radio Communication Systems
ECE 6331 Advanced Telecommunications Engineering
ECE 6332 Wireless Telecommunication Systems
ECE 6335 Digital Control Systems
ECE 6336 Advanced Microprocessor Systems
ECE 6337 Introduction to Stochastic Processes and Random Variables
ECE 6342 Digital Signal Processing
ECE 6347 Advanced Topics in MOS Devices
ECE 6353 RF and Microwave Electronics
ECE 6354 Digital Video in Telecommunications
ECE 6356 Electronic Circuit design
ECE 6364 Digital Image Processing
ECE 6372 Advanced Hardware Design
ECE 6376 Digital Pattern Recognition
ECE 6390 Linear Multivariable Control Systems
ECE 6397 Robotics in Healthcare
ECE 6397 Introduction to Cybersecurity
ECE 6466 Integrated Circuit Engineering
ECE 7342 Advanced Topics in Signal Processing
ECE 7349 Advanced Topics in Microelectronics
ECE 7366 Advanced Process Integration for VLSI

*The above list is subject to change, and other graduate ECE courses can be taken with the approval of the Director of the CSE Program.

*In all cases no credit will be given for courses that are equivalent to courses used in the student's undergraduate degree.

Restrictions for Courses Outside the ECE Department:

- All CS courses should be at the graduate level.
- COSC 6301, 6302, 6303, 6304, 6305, 6306, 6308, 6309, and 6310 cannot be used on the degree plan.
- All courses from the College of Business Administration should be at the 6000 level or higher.
- Courses from the General Business Administration (GENB) cannot be used on the degree plan.
- All the courses of the College of Engineering should be at the 6000 level or higher.
- Courses that do not receive a letter grade but are graded S, U or W will not be counted towards the degree plan.
- Non-ECE courses with similar content as ECE courses: In case a graduate level (6000 or above) course is offered in another department with similar content to a regularly offered ECE graduate course; graduate ECE students must take the ECE version. If the course in question is not offered regularly, or in the graduating semester, then the students may be allowed to take the non-ECE version by submitting a general petition. Under no circumstances will graduate credit be awarded for both the ECE and the non-ECE on of the course.

**IMPORTANT NOTE
Students must refer to ECE department policies and procedures for any information not covered in this document, including those found at http://www.ee.uh.edu/graduate/procedures-requirements-standards.

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