

ELECTRICAL AND COMPUTER ENGINEERING (PH.D.)

<https://ceps.unh.edu/electrical-computer-engineering/program/phd/electrical-computer-engineering>

Description

Our graduate programs are flexible allowing the student a wide choice of courses as well as research topics. We will prepare students for professional skills such as working collaboratively, scholarly writing, and technical presentation and publications. Our programs will provide the students the training needed to pursue a career both in industry and academia. The programs will increase the breadth and depth of the students' electrical and computer engineering knowledge and help them develop the specialized skills in areas including but not limited to biomedical engineering, human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation. Students have internship opportunities such as UNH Interoperability Laboratory (IOL), Center of Coastal Mapping (CCOM), Institute for the study of Earth, Ocean, and Space (EOS), etc.

Requirements

Degree Requirements

The degree of Doctor of Philosophy (Ph.D.) in Electrical and Computer Engineering (ECE) is conferred on qualified candidates who have passed the qualifying examination and candidacy examination in their field of study, who have completed an original investigation in this field and have embodied the results in an acceptable dissertation, and who have passed an oral examination in defense of the dissertation. The degree of Ph.D. is a research degree, and it is not given merely for the completion of course credits.

Students entering the Ph.D. program with a B.S. degree must successfully complete the following minimum program requirements:

- 4 credits of ECE 900 Research and Development From Concept to Communication
- 1 credit of ECE 910 Graduate Seminar
- At least 9 credits of 900 level ECE coursework determined through consultation with advisor and dissertation committee, excluding ECE 900: Research and Development from Concept to Communication, graduate seminar and independent study.
- Qualifying Examination
- Dissertation Research

Students with master's degrees in ECE or related fields may petition for full or partial waiver of the ECE coursework requirement. Students with M.S. degrees in ECE from UNH may also petition to waive the ECE 900 requirement. Dissertation research requirements include the nomination of the dissertation committee to supervise the student's dissertation research, successful defense of the dissertation proposal, and successful completion of the dissertation defense.

Detailed information about the Ph.D. program guidelines, and rules governing the qualifying examination and dissertation requirements, can be found on the ECE departmental website.

Student Learning Outcomes

- Students will master the theoretical concepts or/and practical implementation in advanced aspects of biomedical engineering, human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation.
- Students will have an advanced understanding of the mathematical methods, both analytical and computational, required to solve complex problems in the general field of electrical and computer engineering.
- Students will be proficient in collecting and analyzing data using contemporary laboratory equipment.
- As a result of our two-semester ECE900 courses, students will develop and demonstrate proficiency in the use of library searches along with interpreting and presenting technical information found in those searches.
- Students will have a specialized knowledge of their chosen field of advanced research relating to electrical and computer engineering.
- Students will be able to present advanced scientific ideas effectively in both written and oral form.
- Students will be well prepared for postgraduate study in electrical and computer engineering and related disciplines, as well as advanced careers in a multitude of fields ranging from scientific and technical to financial.