

Doctor of Philosophy Engineering with a Concentration in Electrical and Computer Engineering (PhD)

The Department offers a strong doctoral program leading to the Doctor of Philosophy (Ph.D.) in Engineering degree with a concentration in Electrical and Computer Engineering. The Ph.D. degree is awarded to candidates who have displayed an in-depth understanding of the subject matter and demonstrated the ability to make an original contribution to knowledge in their chosen field of specialty. A very important component of the Ph.D. degree is the original research pursued by the student which culminates in a written dissertation, as well as an oral defense of this work. Ph.D. students usually publish the result of their research in highly reputable nationally and internationally refereed journals. In addition, the students are expected to present their work at national and international conferences.

Admission Requirements

Applicants to a doctoral degree in electrical and computer engineering are expected to have completed a master's degree in electrical engineering and/or computer engineering or a closely related technical field with a minimum grade point average of 3.5 (on a 4.0 scale) in graduate course work. The applications are submitted through the Office of Admissions of Old Dominion University. Together with the completed application form, three letters of recommendation, transcripts from all colleges and universities attended, GRE scores, a resume, and a personal statement of objectives are required. TOEFL scores are required for international applicants. At least two of the recommendation letters should be submitted by faculty or work supervisor familiar with the applicant's graduate work. The Frank Batten College of Engineering and Technology at Old Dominion University has the Direct Bachelor-to-Ph.D. and Integrated Bachelor/Ph.D. programs that allow exceptionally well-qualified undergraduate students to apply for admission directly to a Ph.D. program. The programs are described in the college section of the catalog.

Curriculum Requirements

The Ph.D. degree requires:

- 24 credit hours of graduate-level courses beyond the master's degree (not including Graduate Seminar),
- 24 research credit hours,
- successful completion of a written diagnostic examination,
- successful completion of written and oral candidacy examinations,
- successful completion of a dissertation research proposal, and
- successful completion and public defense of a dissertation.
- Or, in the absence of a master's degree, 78 credit hours (not including Graduate Seminar) beyond the bachelor's degree are required.

For students with a master's degree, the 24 credit hours of graduate-level coursework consist of 8 graduate level courses that are chosen by the student together with the research advisor and are approved by the Graduate Program Director. Of the 8 courses, 5 must be completed at the 800 level, no more than 6 credit hours Independent Study courses (ECE 897), and no more than 3 graduate courses can be taken in other departments. For students without a master's degree, the 78 credit hours of graduate level coursework consist of 48 credit hours of graduate courses and 30 research credit hours (ECE 899). Three fifths of the required 78 credit hours must be at the 800 level and need to comply with regular PhD program degree requirements. Exceptions to the credit-hour distribution requirements at any level must be approved in writing by the graduate program director, the dean

or his or her designee, and the provost or his or her designee. Additional course work or appropriate research background may be required to meet prerequisites for courses or in preparation for the diagnostic examination. Furthermore, at least 1 credit hour of Graduate Seminar (ECE 831) is required, and all funded students are required to attend Graduate Seminar. The graduate course descriptions are included in the catalog and are also listed on the department's website. Additional graduate courses are offered through Cardinal Education (Home - Cardinal Education (<https://www.cardinaleducation.org/>)).

All Ph.D. students are required to take the department's Ph.D. Diagnostic Examination. For BS/PHD students, they are required to take the Diagnostic Exam for the first time before the end of their fourth semester or completing the 36 credit hours of graduate courses. For PHD students with MS, they are required to take the Diagnostic Exam for the first time before the end of their second semester or completing the 18 credit hours of graduate courses. The examination is offered every fall and spring semester, and the student needs to pass the examination in no more than two attempts. The second attempt, if necessary, should be taken at the next offered examination. The topics for the examination and samples of previous examinations are posted in the department's website. The examination rules are given on the first page of each examination.

It is required that the written and oral candidacy examinations be taken in the semester before a student is completing the graduate course work or during the following semester. Once a student has completed the course work, passed the candidacy examinations, and has gained approval for the research proposal, the student advances to candidacy. It is an University requirement that students who have advanced to candidacy be enrolled for at least one credit hour every fall, spring, and summer until graduation. For both advisory and dissertation committees, the chair has to be a full time ECE faculty member or a faculty member with an ECE degree in the BCET college. A faculty member that is not in the BCET college can still be approved to serve as the advisor but cannot be the committee chair unless they have a joint appointment with ECE. Also, a minimum of 2 full time ECE faculty members and 1 outside ECE member are required in the committee.