DOCTOR OF PHILOSOPHY
WITH A MAJOR IN
ELECTRICAL AND COMPUTER
ENGINEERING

Programs leading to the master’s and doctoral degrees in Electrical and
Computer Engineering are provided by the School. Technical interest
areas include bioengineering, computer systems and software, digital
signal processing, electrical energy, electromagnetics, electronic design
and applications, microsystems, optics and photonics, systems and
controls, telecommunications, and VLSI systems and digital design.

The doctoral degree program is research-oriented and highly
individualized. Typically, at least four years of study beyond the
bachelor’s degree are required to complete the doctoral program.

PhD Information

Summary of Requirements

• Core curriculum (18 hours). These courses must be taken in technical
  interest areas as detailed in the course requirement section.
• Electives (14 hours)
• Minor (9 hours)
• Professional Communications Seminar (1 hour)
• Responsible Conduct of Research training (1 hour). The training
  consists of two parts: an online training (to be completed in the first
  90 days of the program) and a class (PHIL 6000).
• Comprehensive Examination. In ECE, this is the combination of the
  Ph.D. Coursework Qualifier and the dissertation proposal.
• PHD dissertation

Course requirements

The Ph.D. course requirements include the course hours normally
accumulated during the student's master's degree. The course
requirements are as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECE 6000-level or higher classes in one or two TIAs</td>
<td>9</td>
<td></td>
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<tr>
<td>Group II</td>
<td></td>
<td></td>
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<tr>
<td>ECE 6000-level or higher classes</td>
<td>9</td>
<td></td>
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<tr>
<td>Group III</td>
<td></td>
<td></td>
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<tr>
<td>Minor in area outside ECE</td>
<td>9</td>
<td></td>
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<td></td>
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<tr>
<td>Group IV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>ECE 8022</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PHIL 6000 Responsible Conduct of Research (RCR)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td>43</td>
<td></td>
</tr>
</tbody>
</table>

1 Three classes in a combination of one or two technical interest
areas of the student’s choosing (All for letter grade credit). Technical
Interest Areas (TIAs) are groups of related courses within electrical
and computer engineering and include: Bioengineering, Computer
Processing, Electrical Energy, Electromagnetics, Electronic Design
& Applications, Nanotechnology, Optics & Photonics, Systems &
Controls, and Telecommunications.

2 Nine hours of classes, all of which must be outside of and not cross-
listed with the TIA(s) of Group I (All for letter grade credit).

3 Nine hours of classes in a single discipline outside of ECE (All for
letter grade credit). The minor is most often in mathematics or
in computer science; the School of ECE maintains a list of Math
courses and a list of Computer Science courses acceptable for
a Ph.D. minor. Minor courses in another area will be considered;
however, minor courses in non-technical areas (for example,
management) will not be approved.

4 Up to 12 M.S. thesis hours, recorded as such on an official transcript,
may be used in this area.

5 Pass/fail. Permit required. Pass the Coursework Qualifier to receive a
permit.

6 Pass/fail. Students entering the Ph.D. program in Fall 2011 or later
and M.S. students who were admitted for Fall 2011 or later and then
transition to Ph.D. must take an RCR course to fulfill this requirement.

PhD residency requirement

Student must have at least two semesters of full-time, on-campus
enrollment.

In addition, there are a number of requirements imposed by the Institute.
These include:

• A minimum of 9 hours for letter grade must be taken at Georgia Tech.
• Student must maintain a 3.0 GPA, and a minimum 3.0 GPA for the
  minor (Group III) courses.
• Once admitted to candidacy, the student must complete all degree
  requirements within 7 years.

Comprehensive Examination

The ECE comprehensive examination is the combination of a coursework
qualifier and a proposal exam.

Coursework qualifier. The Coursework Qualifier requirement is to obtain
a 3.5 GPA in four courses that the student selects from lists prepared by
the ECE Technical Interest Groups (TIGs). Further details are available
in the ECE Graduate Student Handbook. The Coursework Qualifier
requirement must be completed by the end of the second year.

Proposal exam. ECE Ph.D. students must complete their Proposal Exam
by the end of their 7th term, not including summers. The student is
expected to demonstrate background knowledge of their dissertation
topic, as well as broader understanding of the discipline. The Proposal
must contain a detailed plan for the completion of Ph.D.-level research
on the dissertation topic, and preferably some results. However, it is
understood that any results will be early and possibly inconclusive; and
the dissertation topic, methods, and results may evolve considerably in-
between the Proposal and the Ph.D. defense. Students are advised to
seek the input of the committee on the research direction, and inform
their committee members of significant changes.
Doctoral Dissertation
The primary requirement of the Ph.D. student is to do original and substantial research that is reported in the Ph.D. Dissertation and at the Final Defense. The School entrusts the standards of the School in this area to the Reading committee.