M.S. / Ph.D. Degree Planner: Nanoscale Devices and Systems

COURSE REQUIREMENTS

Core Coursework (twelve units)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Core Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 212 AN</td>
<td>Principles of Nanoscience and Nanotechnology</td>
<td>ECE 212AN</td>
</tr>
<tr>
<td>ECE 212 BN</td>
<td>Nanoelectronics</td>
<td>ECE 212BN</td>
</tr>
<tr>
<td>ECE 212 CN</td>
<td>Nanophotonics</td>
<td>ECE 212CN</td>
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</tbody>
</table>

Total: 12 Units

Any one of the following twelve unit sequences (twelve units)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Additional Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 222 A-B-C*</td>
<td>Antennas and Their System Applications, Applied Electromagnetic Theory - Electromagnetics and Computational Methods for Electromagnetics</td>
<td></td>
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<tr>
<td>ECE 230 A-B-C</td>
<td>Solid State Electronics I, II and III</td>
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<tr>
<td>ECE 236 A-B-C² / ECE 235¹,²</td>
<td>III-V Compound Semiconductor Materials, Optical Processes in Semiconductors, Heterojunction Field Effect Transistors, Heterojunction Bipolar Transistors, Nanometer-Scale VLSI Devices</td>
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<tr>
<td>ECE 240 A-B²-C</td>
<td>Lasers and Optics, Optical Information Processing, Optical Modulation and Detection</td>
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<tr>
<td>ECE 247 A-B-C</td>
<td>Advanced BioPhotonics, BioElectronics, BioNanotechnology</td>
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<tr>
<td>MATH 210 A-B-C</td>
<td>Mathematical Methods in Physics and Engineering</td>
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<tr>
<td>PHYS 211 A, PHYS 212 A-B</td>
<td>Solid State Physics, Quantum Mechanics</td>
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</table>

Total: 12 Units

Technical Electives (twenty-four units)

- Any 4 unit, 200+ course from ECE, CSE, MAE, BENG, CENG, NANO, SE, MATS MATH or PHYS taken for a letter grade may be counted. Exceptions to this list require departmental approval.
- Up to 12 units of undergraduate ECE coursework (ECE 111+ only) may be counted.
- M.S. Students (Plan II) are allowed no more than 4 units of 299 as technical electives. Ph.D. and M.S. Students (Plan I) are allowed no more than 8 units of 299 as technical electives.

Total: 24 Units

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Office no.: Jacobs Hall/EBU1 3203

Advisor's Signature

Date

Student Name

Revised: 2014-2015 Academic Year
**Master of Science (M.S.): Thesis and Written Comprehensive Exam**

Students in the M.S. program may elect either Plan I or Plan II. Final choice must be made by the start of Fall quarter of their 2nd year of study (full time students) or the next exam opportunity after a student has attempted 36 units (part-time/half-time students).

**Plan I (thesis)**

- Students in the M.S. Plan I must take twelve units of ECE 299 (Research), eight of which can be used to satisfy degree requirements. Students must also submit a thesis as described in the general requirements of the university.

**Plan II (comprehensive exam)**

- Students in the M.S. Plan II (written comprehensive exam) may count 4 units of ECE 299 (Research) toward the degree requirements and must pass the departmental written comprehensive exam.

- The exam format is a written exam covering a range of topics at the undergraduate level plus a single topic covered at the graduate level (must be your graduate area of study). Students must pass 3 of the 4 sections of the exam; Math is a mandatory pass.
  - The written exam will be held every Fall quarter and the following Spring quarter on an as-needed basis.
  - Students must take the exam at the next opportunity after attempting 36 units of coursework; refusal to do so will result in a failing grade.
  - Students have only two chances to pass the exam; students who fail twice will not be granted a Master's degree.
  - Please refer to [http://ece.ucsd.edu/ms_comp_exam](http://ece.ucsd.edu/ms_comp_exam) for further information. The written exam is 4 hours in duration.

**Ph.D.: Preliminary (Comprehensive) Exam**

- Ph.D. students must find a faculty member who will agree to supervise their thesis research. This should be done by the end of your first year of study.

- They should then devote at least half their time to research and must pass the Ph.D. Preliminary (comprehensive) examination by the end of their second year of study (for students who enter the Ph.D. program with a Master’s degree, the exam must be completed by their fourth quarter of study). This is an oral exam in which the student presents his or her research to a committee of three ECE faculty members, and is examined for proficiency in his or her area of specialization. A written copy of the research presentation is required for the processing of the student’s exam paperwork.

- The outcome of the exam is based on the student’s research presentation, proficiency demonstrated in the student’s area of specialization, and overall academic record and performance in the graduate program.

**Ph.D.: University Qualifying Exam**

- Students who have passed the Ph.D. Preliminary (comprehensive) exam should plan to take the University Qualifying Examination approximately one year after passing the preliminary exam.

- The University does not permit students to continue in graduate study for more than four years without passing this examination.

- The University Qualifying Examination is an oral exam in which the student presents his or her thesis proposal to a university-wide committee. After passing this exam the student is “advanced to candidacy”.

**Ph.D.: Dissertation Defense**

- Students who are advanced to candidacy may register for any ECE course on an S/U basis.

- The final Ph.D. Requirements are the submission of a dissertation, and the dissertation defense.

Updated on 12/2012