ECE GRADUATE ORIENTATION

2023 Fall
Prof. Shanker Balasubramaniam
Department Chair

Prof. Betty Lise Anderson
Associate Chair of Instruction

Prof. Andrea Serrani
Associate Chair of Faculty Affairs
If you have questions about research and courses:
• Course selection and course plan development;
• Research guidance;
• Your thesis (MS or Ph.D. students);
• Your non-thesis project and report (MS students).

Ph.D. students: contact your advisor (need to find an advisor by the end of your first year)
MS students: contact your advisor (if you already have been assigned an advisor) or:

Irem Eryilmaz
Communication
Signal Processing
Networking
Learning
Cyber-security

Lisa Fiorentini
Control Systems
Robotics & Intelligent Transp.
Computer and Digital Systems
Computer Vision & Image Processing
Sustainable Energy & Power

Wladimiro Villarroel
Electromagnetics
Remote Sensing and Microwaves
Analog and RF Circuits
Electro-optics & Photonics
Nanotechnology & Electronic Materials
If you have questions about all things administrative:

• Program policies;
• Degree requirements;
• University and Grad School issues (graduation, deadlines, missing grades,..)

Beth Bucher
MS Program Coordinator
bucher.9@osu.edu
WELCOME

• Welcome to the Grads @ ECE family!
• Make the best of your experience at OSU.
  – Be aware of your responsibilities early on, and proactively work on them.
  – Try to start well: set S.M.A.R.T. goals, organize your schedule.
  – Set and maintain a healthy lifestyle: Exercise regularly, Eat & Sleep well.
  – Move out of the “Grade-Oriented” Undergraduate Mindset towards the “Growth-Oriented” Graduate Mindset
  – Try to be well-connected, friendly, and considerate.
  – Speak English in public spaces so that you are inclusive of others.
  – Stay positive. Work hard while also enjoying the adventure.
  – Form and maintain a good communication with your advisor. Use resources to find your path, but do not hesitate to ask questions if you are lost.
SOCIAL NETWORK CONNECTIVITY

- We have created a closed Facebook group for graduate students.
- It can be used to maintain connectivity and share useful information (including these slides).
- You can become members of the Facebook group:

  **Incoming ECE Grads @ OSU**

- The link to this group is:

  [https://www.facebook.com/groups/694374024320485/](https://www.facebook.com/groups/694374024320485/)

- Open this link and click “Join Group” button to send request.
• **GRADUATE SCHOOL** ([http://www.gradsch.osu.edu](http://www.gradsch.osu.edu))
  - Forms;
  - Register for courses that require permission to enter;
  - Ask questions about what courses count towards your degree;
    (they will do the audit when you graduate)

• **ECE GRADUATE STUDENT HANDBOOK** ([https://ece.osu.edu/current-students/graduate-student-handbook](https://ece.osu.edu/current-students/graduate-student-handbook))

• **STUDENT SERVICE CENTER** ([http://ssc.osu.edu/index.html](http://ssc.osu.edu/index.html))
  - Questions regarding tuitions and fees;
  - Questions regarding when you can register/add/drop courses;
  
  **Office:** 281 W. Lane Ave, Student Academic Services Bldg., Lobby - **Email:** [ssc@osu.edu](mailto:ssc@osu.edu)

  **REGISTRAR** (handles course registration)

  **BURSAR** (handles tuitions and fees)

• **OFFICE OF INTERNATIONAL AFFAIRS** ([http://oia.osu.edu](http://oia.osu.edu))
  - Questions regarding your VISA. For international students **keeping the student VISA status is the most important thing.** Consult with OIA if you want to learn about CPT and OPT opportunities.
GRADUATE DEGREES
PhD Program

The PhD Program offers a unique opportunity for an individual to conduct intensive and prolonged research on a particular topic, leading to archival publication. In the first 1-2 years students take courses to fulfill degree requirements and broaden their knowledge. In the next 2-4 years, students focus on their research and final dissertation.

MS Program

The MS Program aims to give you the opportunity to develop your expertise in a specialized field. In the first two semesters students take courses to fulfill degree requirements. In the next 1-2 semesters, students focus on their project/thesis.

Note: The course workload is typically heavier than in college, the courses are more demanding and much more is expected from the students, both at the PhD and the MS level.

Students can choose one of two options depending on educational and professional goals

Project path (non-thesis)

Students collaborate with industry partners in projects, perform a research project, do an internship project or work in a relevant project

Concludes with a Project Report and technical discussion and or presentation

Research path (thesis)

Students work on industrial or academic research

Concludes with a Thesis and final oral defense

Different paths

Same diploma
## PhD after BS Requirements

### PhD after BS (Minimum 80 credits)

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissertation Research: <strong>ECE 8999</strong></td>
<td>50-credit min.</td>
</tr>
<tr>
<td>Letter-graded Graduate Courses</td>
<td>28-credit min.</td>
</tr>
<tr>
<td>5000+ grad level</td>
<td></td>
</tr>
<tr>
<td>6000+ advanced level</td>
<td></td>
</tr>
<tr>
<td>Letter-graded Courses</td>
<td>21 credits ECE letter-graded courses</td>
</tr>
<tr>
<td>2 ECE 6000+ letter-graded courses</td>
<td></td>
</tr>
<tr>
<td>6 credits secondary research area</td>
<td></td>
</tr>
<tr>
<td>PHILOS or ECE 7080 Engineering Ethics (Waived for those who completed ECE 3080 or PHILOS 1332)</td>
<td>1 Credit</td>
</tr>
<tr>
<td>Individual Studies: <strong>ECE 8193</strong></td>
<td>2-credit max.</td>
</tr>
<tr>
<td><strong>ECE 8891 Seminar</strong></td>
<td>2 credits</td>
</tr>
</tbody>
</table>

*Up to 24 course credits and up to 24 dissertation credits are transferable from another institution, as approved by ECE Graduate Studies Committee.*
# PhD after MS Requirements

<table>
<thead>
<tr>
<th>MS Degree</th>
<th>30 Credits</th>
</tr>
</thead>
</table>
| **Letter-graded Graduate Courses**  
5000+ grad level  
6000+ advanced level | 14 Credits | Minimum 12 letter-graded credits  
21 ECE letter-graded courses from either MS or PhD program  
2 OSU ECE 6000+ letter-graded courses  
6 credits from secondary research area |  
| PHILOS or ECE 7080 Engineering Ethics  
(Waived for those who completed ECE 3080 or PHILOS 1332) | 1 Credit |  
| Individual Studies  
ECE 8193 | 2-credit max. |  
| ECE 8891 Seminar | 2 credits |  

*Up to 9 course credits and up to 10 dissertation credits transferable from another institution, as approved by ECE Graduate Studies Committee*
# MS Project Path (Non-Thesis): 30-credit min.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter-graded Graduate Courses</td>
<td>24-credit</td>
</tr>
<tr>
<td>5000+ grad level</td>
<td></td>
</tr>
<tr>
<td>6000+ advanced level</td>
<td></td>
</tr>
<tr>
<td>ECE Graduate Courses</td>
<td>15-credit</td>
</tr>
<tr>
<td>Adv. ECE Grad Courses</td>
<td>6-credit</td>
</tr>
<tr>
<td>ECE 6070 (Project Management)</td>
<td></td>
</tr>
<tr>
<td>Mandatory within first 2 semesters; does not count as advanced course.</td>
<td></td>
</tr>
<tr>
<td>Submit an advisor-approved MS Plan of Study within the first semester.</td>
<td></td>
</tr>
<tr>
<td>Deadlines based on last family name letter:</td>
<td></td>
</tr>
<tr>
<td>PHILOS or ECE 7080 Engineering Ethics (Waived for those who passed</td>
<td>1 credit</td>
</tr>
<tr>
<td>ECE 3080 or PHILOS 1332)</td>
<td></td>
</tr>
<tr>
<td>The Individual Studies max increases by 1 credit. Submit the MS Graduation</td>
<td></td>
</tr>
<tr>
<td>The Individual Studies max increases by 1 credit. Submit the MS Graduation</td>
<td></td>
</tr>
<tr>
<td>Check Out Form during the final semester.</td>
<td></td>
</tr>
<tr>
<td>Individual Studies: ECE 8193</td>
<td>5-credit</td>
</tr>
<tr>
<td>Project Requirements</td>
<td></td>
</tr>
<tr>
<td>MS Non-Thesis Exam</td>
<td></td>
</tr>
<tr>
<td>Project Report: consult faculty advisor for format (verbal, written, etc.)</td>
<td></td>
</tr>
<tr>
<td>Before starting, submit a 1-page project proposal for advisor approval.</td>
<td></td>
</tr>
</tbody>
</table>

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**ELECTRICAL AND COMPUTER ENGINEERING**
## MS Research Path (Thesis): 30-credit max

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter-graded Graduate Courses</td>
<td>18-credit min.</td>
<td>ECE Graduate Courses: 9-credit min.</td>
</tr>
<tr>
<td>5000+ grad level</td>
<td></td>
<td><a href="#">Advanced ECE Grad Courses: 6-credit min. Submit the MS Graduation Check-out Form within final semester.</a></td>
</tr>
<tr>
<td>6000+ advanced level</td>
<td></td>
<td><a href="#">Related Courses: 9-credit max (engineering, biological sciences, physics, math, chemistry, business, economics, ACCAD and stats).</a></td>
</tr>
<tr>
<td>PHILOS or ECE 7080 Engineering Ethics</td>
<td>1 credit</td>
<td>The Individual Studies max increases by 1 credit. Submit the MS Graduation Checkout Form during last semester.</td>
</tr>
</tbody>
</table>
| (Waived for those who passed ECE 3080 or PHILOS 1332) |           | Subm[

### Requirements

- *ECE 6999 Thesis Research*: 10-credit min.
- *Individual Studies: ECE 6193*: 1-credit max.
- *MS Thesis Exam*: Requirements

**Thesis and oral exam**

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[ECE Graduate Courses](#)

- [Advanced ECE Grad Courses](#)

- [Related Courses](#)
<table>
<thead>
<tr>
<th>SOLID STATE ELECTRONICS and PHOTONICS</th>
<th>Zhao, Hongping</th>
<th>Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER and ENERGY</td>
<td>Illindala, Mahesh</td>
<td>Professor</td>
</tr>
<tr>
<td>CONTROL AND SIGNAL/IMAGE PROCESSING</td>
<td>Schniter, Phil</td>
<td>Professor</td>
</tr>
<tr>
<td>ELECTROMAGNETICS</td>
<td>Teixeira, Fernando</td>
<td>Professor</td>
</tr>
<tr>
<td>CIRCUITS</td>
<td>Fayed, Ayman</td>
<td>Professor</td>
</tr>
<tr>
<td>COMPUTER, NETWORKS, and COMMUNICATIONS</td>
<td>Ekici, Eylem</td>
<td>Professor</td>
</tr>
</tbody>
</table>
PLAN OF STUDY

- MS Students need to have their plan of study approved by their advisor by the end of their first semester;

- PhD students need to submit their plan of study by the end of their first semester;
PhD Qualifying Exam (QE)

Allows a student to earn the status of **doctoral student** by

- Testing the fundamental knowledge acquired by the student over prior coursework
- Assessing the student’s ability to apply this knowledge towards research problems

**PhD students are required to take the QE in the first semester of their second year**

- Failing two attempts leads to dismissal from the PhD program (MS degree can still be earned after completing MS requirements)
- Failure to take the QE during the required semester counts as a failed attempt.
PH.D. QUALIFIER EXAM

• Students will submit the ECE PhD Plan of study by the end of their first semester in the PhD program and indicate their primary and secondary research areas from the 6 ECE areas:
  – Solid State Electronics and Photonics
  – Power and Energy
  – Control, Signal Processing, and Computer Vision
  – Electromagnetics
  – Circuits
  – Computer Engineering, Communications and Networking

• Students will be tested mainly from their primary area material. Students will not be required to take course(s) from the secondary area for the Qualifying Exam.

• Students must complete three ECE letter-graded graduate courses in their primary research area by the semester the Qualifying Exam is scheduled. One of the three required courses may be taken during the semester when the Qualifying Exam is administered.
PH.D. QUALIFIER EXAM

Committee Formation:

- The Qualifying Exam committee will consist of 3 faculty members, 2 members selected by the student.
- The committee can include the student’s advisor but can also exclude the advisor. If the student has more than one advisor, at most one of them can be included, i.e., at least one of the two members selected by the student must be a non-advisor.
- At least one of the two faculty members selected by the student must be from the primary research area and should be indicated to be the chair of the committee.
- One Qualifying Exam committee member is assigned by the Graduate Studies Committee. The 3rd member is preferably selected from the student's primary research area, but may be secondary area member based on faculty availability.
PH.D. QUALIFIER EXAM

• **Exam Format:** The Qualifying Exam will be 90 minutes long, with: 10 minutes for the student presentation including student's academic background, coursework, and a technical topic of interest within the allowed time; and 80 minutes for Questions/answers from the committee.

• **Grading Guidelines:** Each committee member will decide independently and submit a grade of 0 – 2 according to:
  
  0 – The student has difficulty recalling the basic concepts/results on the main topics.
  1 – The student is aware of the basic concepts of the area topics, and can fully solve basic-level questions on these topics. However, the student has difficulty fully solving more advanced questions.
  2 – The student can solve more advanced questions fully. In addition, the student can satisfactorily approach open-ended and research-oriented questions.

  Further specifics on the ratings may be provided by each of the six areas.

• **Exam Decision:** A total score of 4 or more over 6 is required to pass.
PhD Candidacy Exam (CE)
Establishes the suitability of the PhD student’s research proposal to constitute a viable dissertation topic. Elevates the student’s status to PhD candidate.

- The CE is *usually administered one year prior to the student’s expected graduation*
- Failing two attempts results in dismissal from the PhD program.
You are here to learn and to make a contribution to engineering science

– You have the unique opportunity to earn a life-long body of knowledge. Take advantage of it.

– Do not be reluctant to taking high-level courses just because they are difficult

– Invest in gaining expertise in fundamental disciplines (math, physics...)

– Be involved: Attend seminars and colloquia, especially outside your own specific research topic, whenever you can.
GRADUATE APPOINTMENTS

• OSU fellowships are for PhD students only;

• Most GRA, GTA appointments are for PhD students

  - GTA and GAA appointments:
    Prof. Betty Lise Anderson

  - GRA appointments:
    Individual faculty members, or laboratories

  - GRA/GTA/GAA appointments in other departments,
    e.g. Math TA positions, see the Math department.
PhD students who are NOT GRAs:
A professor must agree to be the student’s permanent advisor by signing a change of advisor form by the 2nd semester.

MS students:
Advisors are Profs. Irem Eryilmaz, Lisa Fiorentini or Wladimiro Villarroel, unless another Faculty has already agreed to be the student’s advisor

Change of Advisor
To change advisor, one must fill out a change of advisor form and have both the new and current advisor sign it.
The university's Code of Student Conduct defines academic misconduct as
“Any activity that tends to compromise the academic integrity of the University, or
subvert the educational process.”

Academic Misconduct include, but are not limited to, the following:

• Any situation in which a student presents work as being their own but it is not:
  — copying or cheating during an exam;
  — lifting material uncited from the internet (even if not copyrighted);
  — using others’ homework, lab reports or projects as a basis of your own.

• Falsification or dishonesty in conducting or reporting lab/research results;

• Serving as or asking another student to serve as a substitute for taking an exam;

• Alteration of grades in an effort to change earned credit or a grade;

• Violation of course or program rules.

INSTRUCTORS ARE REQUIRED TO REPORT ACADEMIC MISCONDUCT

Consequences can be very severe (ranging from getting no credit on an assignment to
being expelled from the University)

For more info on Academic Misconduct, please visit http://oaa.osu.edu/coam.html