

EP ECE Master's Thesis Research Expectations

Overview

The ECE program offers motivated students the opportunity to do in-depth research and development through the two-semester thesis option. If the student pursues the thesis option, the two-course sequence 525.803-804 Electrical and Computer Engineering Thesis I/II may replace two of the four required 700-level courses. Limited funds, on the order of \$1K or less, are available to support the student's thesis research for purchasing mechanical and electrical hardware components.

The thesis research should be applied or theoretical work that goes beyond a straightforward implementation of known methods. The intent of the research is to expand the body of knowledge in the broad area of electrical and computer engineering. Each thesis project is to be guided by a research advisor, chosen from ECE Research Faculty (the research advisor may be different from the student's academic advisor assigned at admission to the ECE Program). In addition, each student is required to select a thesis committee that consists of the research advisor and two readers to provide independent opinions on the research and the associated documentation. The two thesis readers may be any member of the technical community (Johns Hopkins or elsewhere) who have deep knowledge in the area of the research and is subject to approval by the thesis advisor, academic advisor, and ECE Program Chair.

The final deliverable is an electronic thesis submission to the Milton S. Eisenhower Library following standards posted at <http://guides.library.jhu.edu/etd>. A professional-quality thesis defense presentation is also required. The defense is to be scheduled near the end of the work, but prior to the assignment of the final grade. The presentation must be open to the public and the audience must include the members of the thesis committee.

Students are encouraged to publish their research at a conference. The ECE program provides up to \$2,000 in travel and registration fees for students who submit a paper at a conference.

Note that students cannot take independent study courses (801/802) in addition to Thesis courses (803/804). Exceptions to that require program leadership approval.

Reference Material:

- [Description of 525.803](#)
- [Description of 525.804](#)
- [Thesis/Research Project Approval Form](#)
- [Thesis in Electrical and Computer Engineering Guidelines](#)

Signatories on the proposal form:

- **Student:** Independently conducting the research with the guidance of the committee.
- **Thesis Advisor:** Main thesis research advisor (aka primary advisor, committee chair).

- **Second Reader:** Member of the research committee (may also be the thesis co-advisor if desired).
- **Third Reader:** Member of the research committee.
- **Academic Advisor:** Assigned at the time of acceptance into JHU EP ECE program.
- **ECE Program Chair:** ECE program chair.

Expectations for the Student:

1. Research Proposal:

- Submit a formal thesis research proposal outlining the research problem, objectives, methodology, expected milestones, tools, and resources needed.
 - This form should be submitted to the thesis committee and a member of the ECE leadership (typically the program chair) and needs to be reviewed and approved by all before the student can register for 525.803.
 - Any changes to the research proposal throughout 525.803 and 525.804 must go through the review and approval process again in order to continue with the research.

2. Progress Reporting:

- Regularly communicate progress to the primary thesis advisor and committee, including any challenges faced and proposed solutions.
- Meet any established milestones and deadlines for deliverables and presentations.
- Set up regular meetings with the thesis committee to discuss the research and provide detailed progress reports.

3. Independent Work:

- The student must demonstrate initiative in conducting independent research while seeking guidance when necessary.
- Stay organized and self-motivated to ensure the research is completed on time.

4. Registering for 525.804:

- The Thesis Project Approval Form must be submitted again with all signatures to register for the 525.804 - Thesis II course
- The student must submit a final presentation or written report for the progress made and plans for completing the thesis with the approval form.

5. Final Thesis Submission:

- Prepare a comprehensive, well-written thesis document that adheres to university formatting and submission guidelines.
- Create a final thesis presentation and defend the thesis before the thesis committee and address any questions or concerns raised.
 - Present a professional-quality defense presentation open to the public, including the thesis committee members, prior to receiving the final grade.
- Submit an electronic thesis following JHU's standards (<http://guides.library.jhu.edu/etd>).

Expectations for the Primary Thesis Advisor (or co-advisors):

1. Guidance and Support:

- Provide consistent, constructive feedback on the student's research proposal, progress, and thesis documents.

- Help the student refine their proposed research and methodology, offering direction throughout the research process.
- 2. **Oversight of Milestones:**
 - Ensure that the student meets established milestones and deadlines.
 - Track the student's progress and hold them accountable for deliverables.
- 3. **Regular Check-ins:**
 - Encourage self-directed learning while offering support as needed.
 - Attend meetings that the student has setup at the agreed-upon cadence.
- 4. **Approval of Deliverables:**
 - Review and approve the research proposal, intermediate progress reports, and final thesis submission.
 - Approve any revisions to the research direction or methodology based on committee feedback.
- 5. **Thesis Defense Preparation:**
 - Assist the student in preparing for their final thesis defense, including reviewing the thesis presentation and anticipating potential questions from the committee.
- 6. **Submitting Final Course Grades:**
 - Submit grades for each of 525.803 and 525.804 that accurately represent the student progress and accomplishments.
 - Grades should be submitted within 72 hours from when the semester officially ends.

Expectations for the Research Committee Members (2nd and 3rd Readers):

1. **Review and Feedback:**
 - Review the student's research proposal, progress reports, and final thesis submission in a timely manner.
 - Provide detailed, constructive feedback and suggestions for improvement, highlighting areas for further development or refinement.
2. **Participation in Meetings:**
 - Attend meetings that the student sets up to discuss research progress.
 - Participate in discussions, offering insights and recommendations that will help guide the student's research.
3. **Thesis Defense:**
 - Participate in the thesis defense, asking thoughtful questions that challenge the student's research and help ensure the quality of the thesis.
 - Provide a formal evaluation of the student's defense and contribute to the decision on whether the student's thesis is acceptable for graduation.
 - Final course grades will be submitted by the student's primary thesis advisor.
4. **Expert Guidance:**
 - Share expertise and knowledge relevant to the student's research area to assist in overcoming challenges.
 - Offer advice on possible resources, methodologies, or tools that could enhance the research.