Johns Hopkins University (JHU) Engineering for Professionals (EP) Electrical and Computer Engineering (ECE): Special Project I / II (EN.525.801/802) Expectations

Overview

The JHU EP ECE program offers interested students the opportunity to perform focused technical exploration and the development of professional research and communication skills through a one- or two-semester Special Project I/II option. Taking EP ECE Special Project I (one semester option) or Special Project I and II (two semester option) provides students with the opportunity to engage in an individually tailored, faculty-supervised project on a topic relevant to electrical and computer engineering. Students will identify a topic of interest and work closely with an ECE faculty Special Project advisor to define the scope, objectives, approach and metrics of success for the project[1]. Projects can involve original research, a novel application or design, or independent study comprising a detailed literature survey with critical analysis and synthesis elements. The one- or two-course sequence, EN.525.801 or EN.525.801/802, may replace one (EN.525.801) or two (EN.525.801/802) of the four EP ECE required 700-level courses.

Eligibility

Students in good standing may take Special Project I (EN.525.801) or both Special Project I and II (EN.525.801/802) toward the Master of Science (M.S.) degree in Electrical and Computer Engineering. To be eligible, students must complete at least half of their degree program before registering for this course. A completed Special Project proposal form, detailing the proposed concept, scope of work and expected deliverables, must be approved by the student's academic and Special Project advisors as well as the ECE program chair prior to enrollment. Students should rely on knowledge gained from previous EP ECE coursework to inform and support their Special Project independent study.

Required Deliverables

A key objective of Special Project I and II is the production of tangible deliverables. For Special Project I, the tangible deliverables include a research paper and a related final technical presentation to the Special Projects advisor. If the student takes both Special Project I and II, the tangible deliverables include an end-of- semester status report document and associated

[1] Optionally, students can request the participation of other technical subject matter experts as informal consultants or report reviewers for the Special Project. Identifying / selecting optional (informal) consultants is the responsibility of the student in collaboration with and approval of the Special Project advisor.

presentation to the Special Projects advisor at the end of the first semester (end of Special Project I), and a final research paper and related final technical presentation to the Special Projects advisor at the end of the second semester (Special Project II)[2]. Students must prepare a formal paper and presentation that conforms to the formatting and submission guidelines of a (student- and Special Project advisor-selected) peer-reviewed technical conference or journal relevant to the field of electrical and computer engineering and to the project topic area. The paper and presentation must meet the technical rigor and quality standards expected of such venues. Submission to an actual conference or journal is encouraged but not required. The ECE program provides up to $2,000 in travel and registration fees for students who choose to submit a paper / presentation at a conference. Typically, students cannot take Special Project courses (EN.525.801/802) in addition to Thesis courses (EN.525.803/804). Exceptions to this rule require EP ECE program leadership approval.

The final submission / deliverables must demonstrate clear technical contributions, critical analyses, and a strong grasp and application of sound engineering practices. The student presents the completed Special Project work and results to the Special Project advisor and any informal / optional consultants (if relevant). Optionally, the presentation can be open to other JHU EP students and faculty with approval from the Special Project advisor. The Special Project advisor will assess whether the work satisfies the academic and scholarly expectations of the course and provide a final grade.

Reference Material:

- Description of EN.525.801
- Description of EN.525.802
- Special Project (Independent Study) Approval Form
- Student Handbook - Electrical and Computer Engineering - JHU Engineering for Professionals

Signatories on the Proposal Form:

- **Student**: Independently conducts the research with the guidance of the Special Project advisor.
- **Special Project Advisor**: Primary Special Project advisor (a.k.a. research advisor).
- **Academic Advisor**: Assigned at the time of acceptance into JHU EP ECE program.
- **ECE Program Chair**: ECE program chair.

Expectations for the Student:

1. **Special Project Research Proposal:**
    - Identify a topic of interest and an EP ECE Special Project advisor, selected from the existing EP ECE faculty. The student and Special Project advisor (together)

[2] If a student initially plans to complete both Special Project I and Special Project II but later decides—together with the Special Project advisor—not to continue beyond Special Project I, all Special Project I deliverables outlined above are still required.

may also select other informal technical subject matter experts as consultants or report reviewers (readers) for the Special Project.
    - Submit a formal Special Project proposal (prior to the beginning of the first semester and / or first and second semesters) outlining the research problem, objectives, methodology, expected milestones, tools, and resources needed.
        - This form should be submitted to the Special Project advisor, academic advisor and the ECE program chair (or other member of the ECE leadership team) and must be reviewed and approved by all before the student can register for EN.525.801 and/or EN.525.802.
        - Any changes to the research proposal throughout EN.525.801 and/or EN.525.802 must go through the review and approval process again to continue with the research.
    - Work closely with the EP ECE Special Project advisor to define the scope, objectives, proposed approach and metrics of success for the project. Projects may involve original research, a novel application or design, or a detailed literature survey with critical analysis and synthesis elements.
    - Meet established milestones and deadlines for deliverables and presentations.
2. **Progress Reporting:**
    - Establish regular meetings (weekly or bi-weekly) with the Special Project advisor to discuss the research and provide detailed progress reports. If applicable and desired, the optional informal Special Project consultants may be included.
    - Communicate progress to the Special Project advisor, including any challenges faced and proposed solutions.
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 EN.525.802**:
    - The Special Project Approval Form must be submitted again with all signatures to register for the EN.525.802 – Special Project II.
    - The student must submit a final presentation and written report on the progress made during Special Project I (EN.525.801) and plans for completing Special Project II (EN.525.802) with the approval form.
5. **Final Special Project Paper Preparation and Submission:**
    - At the end of the one-semester (Special Project I) option or the end of the two semester option (Special Project I/II), prepare a formal paper that conforms to the formatting and submission guidelines of a (student- and Special Project advisor-selected) peer-reviewed technical conference or journal relevant to the field of electrical and computer engineering and to the project topic area. The paper must meet the technical rigor and quality standards expected of such venues. Submission to an actual conference or journal is encouraged but not required.
    - Note that, for the two-semester Special Project I and II option, a status presentation is prepared and presented at the end of the first semester, and a final presentation is prepared and presented at the end of the second semester.
    - Address any questions or concerns raised during the presentation(s).

Expectations for the Special Project / Research Advisor:

1. **Guidance and Support:**
    - Help the student define and refine their proposed research, objectives, methodology, and metrics.
    - Provide consistent, timely and constructive feedback on the student's research proposal, progress, and documentation.
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.
    - Consistently attend meetings that the student has set up at the agreed-upon cadence and provide any relevant feedback.
4. **Approval of Deliverables:**
    - Provide timely review and approval of the research proposal, intermediate progress reports, and final documentation submission.
    - Review, provide feedback and approve in a timely manner any revisions to the research direction or methodology.
5. **Special Project Presentation Preparation:**
    - Assist the student in preparing their presentations, including providing timely review of all documentation.
6. **Submitting Final Course Grades:**
    - Submit grades for EN.525.801 and EN.525.802 that accurately represents student progress and accomplishments.
        - Grades should be submitted within 72 hours from when the semester officially ends.

Expectations for Optional Informal Special Project Consultants / Reviewers:

1. **Review and Feedback:**
    - Review the student's research proposal, progress reports, and final documentation 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. **Special Project Final Presentation:**
    - Participate in the final Special Project presentation, asking thoughtful questions that challenge the student's research and help ensure the quality of the work.
    - Provide feedback to the Special Project advisor to assist in determining a final grade (if requested by the Special Project advisor).
        - Final course grades are, ultimately, the purview of the student's Special Project 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.