New ECE Graduate Student Orientation Meeting

Tuesday, August 13, 2024
1pm – 2pm, in AK219

and via Zoom: https://wpi.zoom.us/j/5088315351
Introductions….

Rick Brown
Department Head
and ECE Professor
since 2000

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Reinhold Ludwig
Associate
Department Head
and ECE Professor
since 1986

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Patrick Schaumont
Chair of ECE
Graduate Program
Committee
and ECE Professor
since 2020

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Colleen Sweeney
Graduate Program
Secretary
ECE admin staff
since 2004

sweeney@wpi.edu

Main contact for any
graduate program questions
(i.e. forms, paperwork, letters, etc.)
Other WPI/ECE Support

Computer problems? WPI Helpdesk in the Gordon Library
its@wpi.edu

Kira Clary WPI Student Success Manager
kclary@wpi.edu

Maureen Langhammer Undergraduate Program Secretary
mlanghammer@wpi.edu

Kim Gallo ECE Office Coordinator (expense reports, etc.)
kgallo@wpi.edu

@ECEWPI
@WPI_ECE
Expand scholarly work at WPI: **Grow interdisciplinary discovery and address global challenges** such as sustainability, climate change, human health, and socially just technologies, through increased funding, better proposal win rates, and **greater student engagement in transformational research** for impact on societal problems.
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<tr>
<th>Program</th>
<th>School</th>
<th>Degree</th>
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<tr>
<td>B.S./M.S. in Electrical and Computer Engineering</td>
<td>Electrical and Computer Engineering</td>
<td>B.S./M.S. (→)</td>
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<td>Certificate in Electrical and Computer Engineering</td>
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<td>Certificate (→)</td>
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<td>Certificates in Power Systems</td>
<td>Electrical and Computer Engineering</td>
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<tr>
<td>M.S. in Electrical and Computer Engineering</td>
<td>Electrical and Computer Engineering</td>
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<tr>
<td>Master of Engineering in Electrical and Computer Engineering</td>
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<tr>
<td>Ph.D. in Electrical and Computer Engineering</td>
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Worcester Polytechnic Institute
Graduate Certificates

- **Graduate Certificate (GC)** – the graduate certificate program allows students to take five courses that are focused in a specific technical area (*ECE, SYS, PSE, or PSM*) which can be used towards a graduate degree program should the student decide to further their education.

A graduate certificate is a great way to learn advanced skills at the graduate level, but a GC is not an official “degree” at WPI.
- **Master of Science (MS)** - Students have the option of following two routes to this degree: (1) a non-thesis option requiring 30 graduate credits in course work, independent study or directed research, or (2) a thesis option also totaling 30 graduate credits and including a thesis of nine credits. Students completing a master’s degree with thesis option will be required to do a presentation of their thesis as part of their degree requirements.

- **Combined BS+MS** – WPI students can double count courses (up to 12 credits) taken as an undergrad towards their MS degree provided that they are accepted into this program. Students in the combined program continue to be registered as undergraduates until they have completed all requirements for the B.S. degree.

- **Master of Engineering (MEng)** - The MEng degree is tailored for individuals seeking an industrial career path. Similar to the M.S. degree, the MEng degree requires the successful completion of at least 21 credits of WPI ECE graduate courses. In contrast to the M.S. degree, the MEng degree allows up to 9 credits of non-ECE courses to be chosen as management courses and does not include a thesis option.
• **Doctor of Philosophy (PhD)** - Students with a M.S. degree in electrical and computer engineering may apply for the doctoral program; admission is contingent on a review of the application and associated references.

**Requirements:** 30 credits of coursework, plus an additional 30 credits of dissertation research. Students will also need to pass the Diagnostic Qualifying Exam during their first year in the PhD program as well as an Area Exam at least 3 months prior to their Dissertation Defense.

A PhD is the highest degree awarded by WPI.
Masters Degrees (MS/MEng)

- 50 ECE degrees awarded
- 26 Systems Engineering degrees awarded
- 24 Power Systems Engineering degrees awarded
- 10 Power Systems Management degrees awarded

Doctoral of Philosophy: Deep dive into discipline resulting in an independent contribution to knowledge

- 6 PhD ECE degrees awarded in 2023

ECE Program of Study Forms

All graduate students are required to submit their completed program of study forms to Colleen by email (PDF) by the end of their first semester in the graduate program.

Get these forms online: https://www.wpi.edu/academics/departments/electrical-computer-engineering/resources
Become Familiar with the WPI Graduate Catalog!

https://wpi-grad.cleancatalog.net
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<th>Course Code</th>
<th>Course Title</th>
<th>Department</th>
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<td>Analysis of Probabilistic Signals and Systems</td>
<td>Electrical and Computer Engineering</td>
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<td>ECE 503</td>
<td>Digital Signal Processing</td>
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<tr>
<td>ECE 504</td>
<td>Analysis of Deterministic Signals and Systems</td>
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<td>ECE 505</td>
<td>Computer Architecture</td>
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<tr>
<td>ECE 506</td>
<td>Introduction to Local and Wide Area Networks</td>
<td>Electrical and Computer Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ECE 514</td>
<td>Fundamentals of RF and MW Engineering</td>
<td>Electrical and Computer Engineering</td>
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ECE 502. ANALYSIS OF PROBABILISTIC SIGNALS AND SYSTEMS

Applications of probability theory and its engineering applications. Random variables, distribution and density functions...

ECE 503. DIGITAL SIGNAL PROCESSING

Discrete-time signals and systems, frequency analysis, sampling of continuous time signals, the z-transform, ...

ECE 504. ANALYSIS OF DETERMINISTIC SIGNALS AND SYSTEMS

Review of Fourier series and linear algebra. Fourier transforms, Laplace transforms, Z transforms and their interrelationship. State space modeling of continuous-time and discrete-time systems...
ECE 505. COMPUTER ARCHITECTURE

This course introduces the fundamentals of computer system architecture and organization...

ECE 506. INTRODUCTION TO LOCAL AND WIDE AREA NETWORKS

This course provides an introduction to the theory and practice of the design of computer communications networks...

ECE 578. CRYPTOGRAPHY AND DATA SECURITY

This course gives a comprehensive introduction to the field of cryptography and data security...
ECE 531: Principles of Detection and Estimation Theory

Department: Electrical and Computer Engineering  
Credits: 3.0


Prerequisites

ECE 502 and ECE 504 or equivalent
Why do I need an academic advisor?
To answer any questions you have about the ECE graduate program, e.g., choosing courses, course pre-requisites, graduation requirements, etc.

How do I know if I have been assigned an advisor?
Ask Colleen! sweeney@wpi.edu

Am I allowed to change my advisor? What is the process?
Yes, just contact Colleen and she can help you with this. sweeney@wpi.edu

Is my academic advisor also my research advisor?
No, an academic advisor is only assigned to advise academic issues, e.g., course selection. If you end up working with a research advisor different from your academic advisor, it is common to make your research advisor also your academic advisor.
Teaching Assistants

TA positions are provided by the ECE department and are reserved for full-time PhD students actively working on research projects with ECE faculty. Your research advisor can request an ECE TA position.

Graduate Tutors

GT positions are available to Masters and Doctoral students. You must respond to the tutoring survey sent out by Colleen a few weeks before each term to be considered for a tutoring position.

Research Assistants

RA positions are provided by ECE faculty with independent research funding, e.g., grants from funding agencies, almost always to full-time PhD students. Please visit ECE’s research pages for more information on the department’s research labs.

*New students who have been awarded RA or TA positions should email Colleen for additional information regarding paychecks, mailboxes, forms, etc.*
Graduate internship experiences may be completed by Masters and Doctoral students at WPI in order to enhance their professional development and career readiness. The graduate internship is a short term and temporary work assignment in residence at a company or other external organization that forms a complementary part of a student’s educational program. Graduate students must complete a registration form and gain proper approvals to participate in an internship.

- **The WPI Career Development Center maintains a list of internship opportunities.**

- **Start and end dates must follow the academic calendar and are only allowed for paid positions.**

- **Students should speak to their academic advisor to determine what evaluation materials will need to be submitted at the end of their internship.**

https://www.wpi.edu/academics/graduate/internships
https://www.wpi.edu/student-experience/career-development
How long will it take me to finish my degree program?

Length of the degree programs vary based on the type of degree and whether the student is full-time or part-time.

**MS/Meng**: The total number of tuition credits is **30 credits**. On average, a full-time MS/MEng student, taking 9 credits (3 classes) per semester, will be able to complete the requirements for their degree program in about two years or less. Part-time students, taking one to two classes per semester, can complete their degree program in about 3 to 5 years.

**PhD**: Students must complete **60 credits of graduate work beyond the credit required for the MS degree: 30 credits of coursework and an additional 30 credits of research**. Full-time students pursuing a Ph.D. degree can usually complete their degree requirements in about 3 or 4 years depending on the number of credits the student completes each semester.
What are the graduate seminar course requirements?

Full-time MS, MENG, and PhD ECE graduate students are required to register and pass two semesters of ECE Graduate Seminar. BS+MS students are only required to pass one semester of graduate seminar. Number of seminars attended needed to pass vary by instructor. Students should attend the first seminar meeting of the semester to find out the specifics.

Where can I find a listing of ECE’s course schedules for the upcoming academic year?

All course schedules, past, present, and future, can be found in Workday.

What are the graduation dates for the academic year?

WPI graduation dates are in October, February and May. Application for graduation forms must be filled out and submitted to Colleen in the ECE office for signatures so that the completed forms can be sent to the registrar’s office by the deadlines listed on the application for graduation forms (September - July 1st, February - October 1st, May - February 1st).
Are grad students allowed to take undergraduate courses for graduate credit?

Graduate students can count up to three 4000-level ECE courses (6 credits) toward their graduate course requirements. Note that undergraduate courses only count as 2.0 graduate credits each.

How do I register for directed research, independent study or thesis & dissertation credits?

You should first make sure you have an ECE faculty member to advise these activities. Registration is handled by Workday. Please contact the registrar’s office if you have any questions.
How many credits am I allowed to transfer for courses taken at another university?

Students can transfer up to 9 credits (3 courses) of coursework taken at another university provided that the courses are comparable to ones offered at WPI and the grades received were a B or better and providing that the courses being transferred were not used towards a previous degree. Transfer credit forms must be completed for any courses being transferred and must include the course description, syllabus, the book used and the homework assignments given. An updated program of study form with the transfer courses listed, must also be included.
What if I fail a course or end up on academic probation?

**Academic Warning**: Students have one semester of course work to raise their cumulative overall GPA. Students who do not improve their GPA upon the next review will move down to the next level of standing. Students who do not have a cumulative overall GPA of at least 3.0 will remain in Academic Warning.

**Academic Probation**: Students have one semester of course work to raise their cumulative overall GPA. Students who improve their GPA but still remain below 3.0 will be moved up to Academic Warning. Students who do not improve their GPA upon the next review will move down to the next level of standing.

**Academic Dismissal**: Students are academically withdrawn from the University. Students may appeal dismissal by submitting a petition to the University Registrar.

**Academic standing appeal procedure**: Student petitions will be reviewed by the Committee on Graduate Studies and Research. A representative from the student’s home department will be present during the appeal process. This petition must be submitted with any supporting documentation no later than the date specified in the dismissal letter, typically two weeks after semester end.
Thank you for attending!* 

We look forward to helping you achieve your academic goals!

(*Today’s presentation slides will be posted on our ECE web page under “Resources” then “ECE Presentations” for students to reference.*)