



WPI

Department of Electrical and Computer Engineering

New ECE Graduate Student Orientation Meeting

Tuesday, August 13, 2024

1pm – 2pm, in AK219

and via Zoom: <https://wpi.zoom.us/j/5088315351>

Introductions....



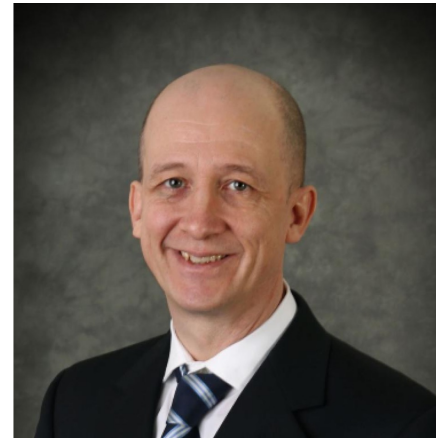
Rick Brown
Department Head
and ECE Professor
since 2000

drb@wpi.edu



Reinhold Ludwig
Associate
Department Head
and ECE Professor
since 1986

ludwig@wpi.edu



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

pschaumont@wpi.edu



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

WPI Strategic Plan: Lead with Purpose



**Student Well-Being,
Access, & Affordability**



**Purpose-Driven
Education & Research**



**Our Inclusive
Community**

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

Become Familiar with the WPI Graduate Catalog!



<https://wpi-grad.cleancatalog.net>



Graduate Catalog 2023-24

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Programs of Study

School



Electrical and Computer Engineering



- Any -



Search

Reset

School of Engineering

B.S./M.S. in Electrical and Computer Engineering

Electrical and Computer Engineering

B.S./M.S.



Certificate in Electrical and Computer Engineering

Electrical and Computer Engineering

Certificate



Certificates in Power Systems

Electrical and Computer Engineering

Certificate



M.S. in Electrical and Computer Engineering

Electrical and Computer Engineering

Master of Science



Master of Engineering in Electrical and Computer Engineering

Electrical and Computer Engineering

Master of Engineering



Master of Engineering in Power Systems Engineering

Electrical and Computer Engineering

Master of Engineering



Ph.D. in Electrical and Computer Engineering

Electrical and Computer Engineering

Ph.D.

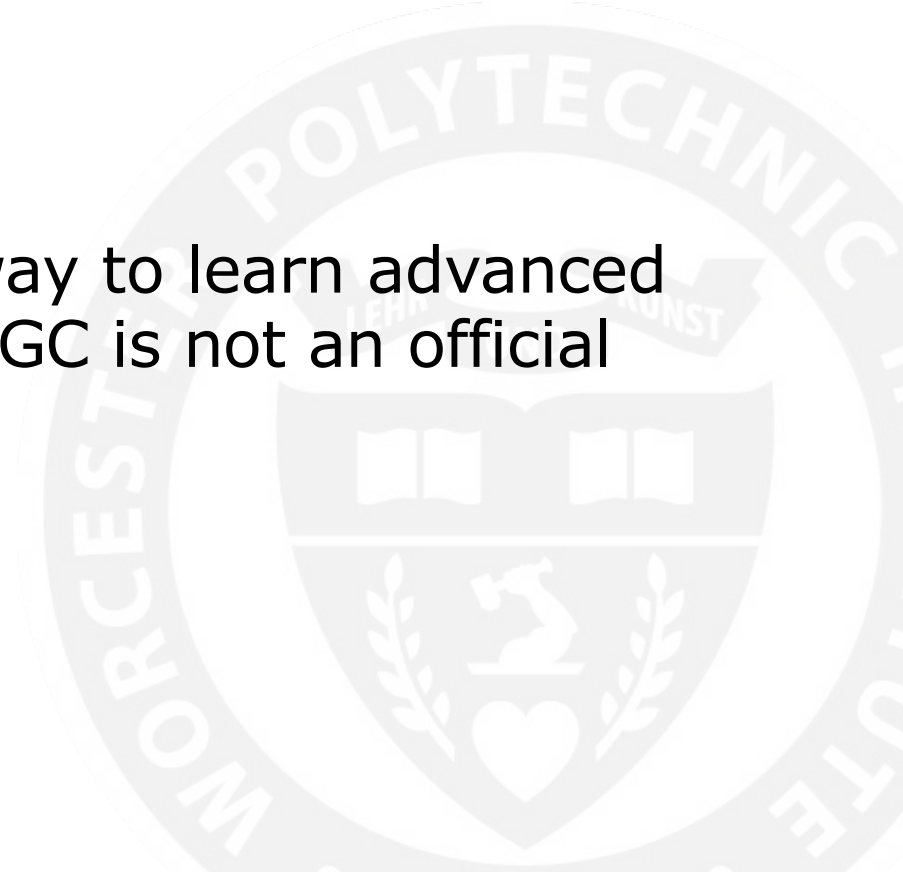


Graduate Certificates



- **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.



ECE Masters Degree Programs



- **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.

WPI ECE Graduate Degrees



➤ **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.

**WPI**
Department of Electrical and
Computer Engineering

**Master of Engineering
Plan of Study Form**

Student ID Number: _____ BS/MS _____ Full Time _____ Part Time _____
(please check one)

Student Name: _____
(last) (first) (middle)

Address (home): _____
City _____ State _____ Zip _____

Work Phone: () _____ Home or cell # () _____ Email _____

Advisor's Name (please print): _____

**Required: 21 credits of WPI ECE graduate courses, including thesis and directed research;
(not including transfer credits)**

Course No.	Course Title	Term/Year	Grade	Credits
ECE				
ECE				
ECE				
ECE				
ECE				
ECE				

**Required: 9 credits from 4000-level (maximum of two) or 500-level courses from ECE, Computer Science,
Physics, Engineering, Mathematics or Management (graduate courses only)**

Course No.	Course Title	Term/Year	Grade	Credits

Required: Graduate Seminar Courses (two courses for full-time regular MEng, one course for full-time BS/MS)

Course No.	Course Title	Term/Year	Grade	Credits
ECE 596	Graduate Seminar (full-time students only)			
ECE 596	Graduate Seminar (full-time students only)			


Transfer Courses / Additional Courses (not counted towards MEng degree requirements)

Course No.	Course Title	Term/Year	Grade	Credits

Student's Signature: _____ Date: _____

Advisor's Signature: _____ Date: _____

One for instructions
3/26/2014

**WPI**
Department of Electrical and
Computer Engineering

**Master of Science
Plan of Study Form**

Student ID Number: _____ BS/MS _____ Full Time _____ Part Time _____
(please check one)

Student Name: _____
(last) (first) (middle)

Address (home): _____
City _____ State _____ Zip _____

Work Phone: () _____ Home or cell # () _____ Email _____

Advisor's Name (please print): _____

**Required: 21 credits of WPI ECE graduate courses, including thesis and directed research;
(not including transfer credits)**

Course No.	Course Title	Term/Year	Grade	Credits
ECE				
ECE				
ECE				
ECE				
ECE				
ECE				

**Required: 9 credits from 4000-level (maximum of two) or 500-level courses
from ECE, computer science, physics, other engineering, or mathematics**

Course No.	Course Title	Term/Year	Grade	Credits

Required: Graduate Seminar Courses (two courses for full-time regular MS, one course for full-time BS/MS)

Course No.	Course Title	Term/Year	Grade	Credits
ECE 596	Graduate Seminar (full-time students only)			
ECE 596	Graduate Seminar (full-time students only)			


Transfer Courses / Additional Courses (not to be counted towards M.S. degree requirements)

Course No.	Course Title	Term/Year	Grade	Credits

Student's Signature: _____ Date: _____

Advisor's Signature: _____ Date: _____

One for instructions
3/26/2014

**WPI**
Department of Electrical and
Computer Engineering

**Doctor of Philosophy
Plan of Study Form**

Student ID Number: _____ Full Time _____ Part Time _____
(please check one)

Student Name: _____
(last) (first) (middle)

Address (home): _____
City _____ State _____ Zip _____

Work Phone: _____ Home or cell # _____ Email _____

Research Advisor (please print): _____

**Required 30 credits (minimum amount) for ECE 699 Ph.D. dissertation
(more can be taken in fulfillment of Ph.D. degree requirements)**

Course No.	Course Title	Term/Year	Grade	Credits
ECE 699	Ph.D. Dissertation			
ECE 699	Ph.D. Dissertation			
ECE 699	Ph.D. Dissertation			
ECE 699	Ph.D. Dissertation			
ECE 699	Ph.D. Dissertation			
ECE 699	Ph.D. Dissertation			
ECE 699	Ph.D. Dissertation			
ECE 699	Ph.D. Dissertation			
ECE 699	Ph.D. Dissertation			
ECE 699	Ph.D. Dissertation			

**Required 18 credits (minimum amount) of other coursework and/or dissertation
contributing to the 60 credits total for Ph.D. requirements**

Course No.	Course Title	Term/Year	Grade	Credits

**Required 6 credits for first minor (courses cross-listed with ECE do not count;
physics, math, computer science, and engineering are recommended)**

Course No.	Course Title	Term/Year	Grade	Credits

Updated 3/26/2014

Get these forms online:

<https://www.wpi.edu/academics/departments/electrical-computer-engineering/resources>

Worcester Polytechnic Institute

Become Familiar with the WPI Graduate Catalog!



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ECE Graduate Courses

See the Grad Catalog for more details



WPI



ECE 502	Analysis of Probabilistic Signals and Systems	Electrical and Computer Engineering	Credits 3	→
ECE 503	Digital Signal Processing	Electrical and Computer Engineering	Credits 3	→
ECE 504	Analysis of Deterministic Signals and Systems	Electrical and Computer Engineering	Credits 3	→
ECE 505	Computer Architecture	Electrical and Computer Engineering	Credits 3	→
ECE 506	Introduction to Local and Wide Area Networks	Electrical and Computer Engineering	Credits 3	→
ECE 514	Fundamentals of RF and MW Engineering	Electrical and Computer Engineering	Credits 3	→



Introductory ECE Graduate Courses Signals & Systems



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...

Introductory ECE Graduate Courses Computer Engineering & Security



ECE 505. COMPUTER ARCHITECTURE

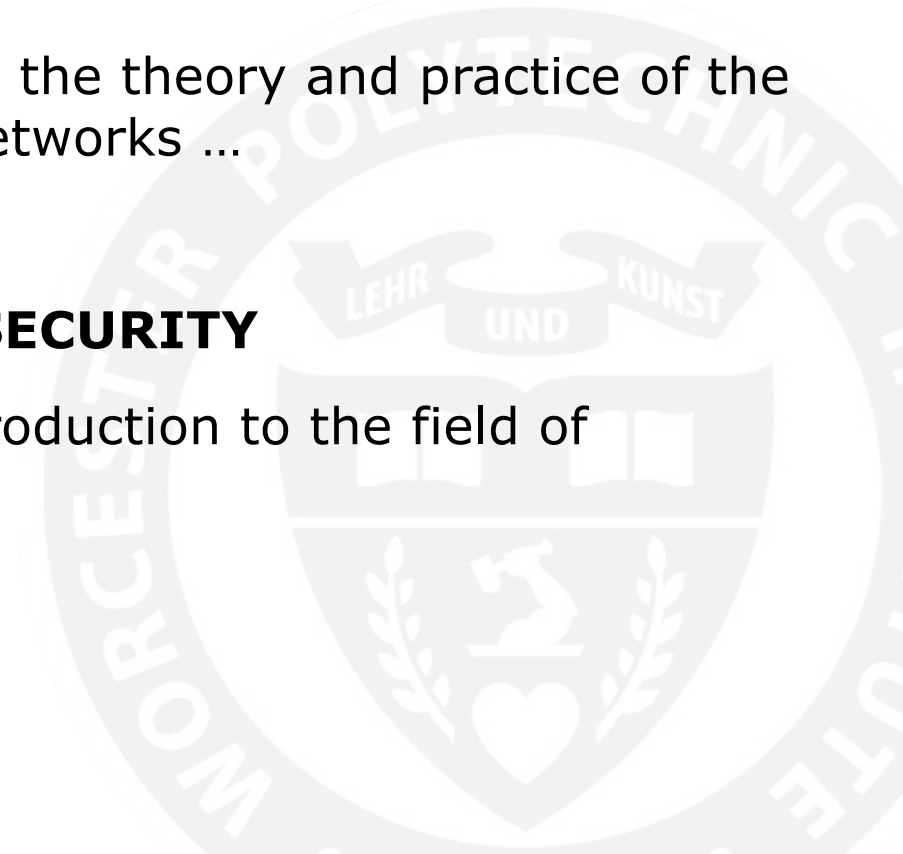
This course introduces the fundamentals of computer system architecture and organization...

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. ...



Advanced Graduate Courses

Pay Attention to Pre-Requisites



WPI

ECE 531: Principles of Detection and Estimation Theory

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Department [Electrical and Computer Engineering](#)

Credits 3.0

Detection of signals in noise, optimum receiver principles, M-ary detection, matched filters, orthogonal signals and representations of random processes. MAP and maximum likelihood estimation. Wiener filtering and Kalman filtering. Channel considerations: prewhitening, fading and diversity combining.

Prerequisites

ECE 502 and ECE 504 or equivalent

ECE Academic Advisors



➤ **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.

ECE Funding Opportunities



➤ **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 Opportunities



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>

The answers to the ECE Department's most frequently asked questions can be found below and on the subsequent slides. If you don't see the question and answer you are looking for, please let us know! Always refer to the latest catalog for the full details.

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.*

FAQ's



WPI

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.

FAQ's



WPI

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.*



WPI

Department of Electrical and Computer Engineering

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.)*