New ECE Graduate Student Orientation Meeting

Monday, August 24, 2015
2:00 PM - AK 233
Introductions....

- **ECE Department Head** – Professor Yehia Massoud
- **ECE Associate Department Head** – Professor John McNeill
- **Graduate Program Committee Chair** – Professor Kaveh Pahlavan
- **ECE Shop Technicians** – Bill Appleyard / TBD
- **ECE Lab and Office Manager** – Professor James O’Rourke

**ECE Department Office Secretaries:**

- Colleen Sweeney – Main contact person for any graduate program questions (*i.e. forms, paperwork, letters, etc.*)
- Cathy Emmerton – Main contact person for questions about expense reports, reimbursements, etc.
- Shannon Cotter – Main contact person for ECE’s undergraduate program.
ECE Certificate and Degree Programs

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

- **BSMS** – WPI students are allowed to 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.

- **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.
• 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.

• 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. Areas in which Ph.D. Research programs are currently underway include computational fields, machine vision, wireless networks, power systems and computer engineering. 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.
Program of Study Forms

The Program of Study Forms are to be used as a guide to keep students stay on track as far as the courses they have taken or are planning to take in order to complete their degree programs.

Students should contact their academic advisors to set up a time to meet to discuss possible courses that can or should be taken, based on the students area of interest, in order to successfully complete their graduate program. All courses (30 credits, total) must be listed on the student’s program of study form and then signed by the student’s academic advisor.

Students should submit their completed program of study forms to Colleen in the ECE office by the end of their first semester in the graduate program. Since these forms are kept in the student’s file in the ECE office, they can be updated at any time. Additional forms can be found in the folders on Colleen’s desk in the ECE office.
ECE’s Program of Study Forms

Worcester Polytechnic Institute

Master of Engineering Program of Study Form

Student ID Number: ____________________________

Student Name: ____________________________

Address (Home): ____________________________

City: ____________________________ State: ____________ Zip: ____________

Work Phone: (________) Name or title: ______ Email: ______

Advisor’s Name (signature): ______

Department of Electrical and Computer Engineering

Master of Science Program of Study Form

Student ID Number: ____________________________

Student Name: ____________________________

Address (Home): ____________________________

City: ____________________________ State: ____________ Zip: ____________

Work Phone: (________) Name or title: ______ Email: ______

Advisor’s Name (signature): ______

Department of Electrical and Computer Engineering

Doctor of Philosophy Program of Study Form

Student ID Number: ____________________________

Student Name: ____________________________

Address (Home): ____________________________

City: ____________________________ State: ____________ Zip: ____________

Work Phone: (________) Name or title: ______ Email: ______

Advisor’s Name (signature): ______

Department of Electrical and Computer Engineering

Worcester Polytechnic Institute
Introductory ECE Graduate Courses

The following are considered “introductory” ECE graduate courses that new students usually register for during their first or second semester:

• **ECE 502. ANALYSIS OF PROBABILISTIC SIGNALS AND SYSTEMS**
  Applications of probability theory and its engineering applications. Random variables, distribution and density functions. Functions of random variables, moments and characteristic functions. Sequences of random variables, stochastic convergence and the central limit theorem. Concept of a stochastic process, stationary processes and ergodicity. Correlation functions, spectral analysis and their application to linear systems. Mean square estimation. (Prerequisite: Undergraduate course in signals and systems.)

• **ECE 503. DIGITAL SIGNAL PROCESSING**
  Discrete-time signals and systems, frequency analysis, sampling of continuous time signals, the z-transform, implementation of discrete time systems, the discrete Fourier transform, fast Fourier transform algorithms, filter design techniques. (Prerequisites: Courses in complex variables, basic signals and systems.)
Introductory ECE Graduate Courses (cont.)

- **ECE 504. ANALYSIS OF DETERMINISTIC SIGNALS AND SYSTEMS**
  

- **ECE 505. COMPUTER ARCHITECTURE**
  
  This course introduces the fundamentals of computer system architecture and organization. Topics include CPU structure and function, addressing modes, instruction formats, memory system organization, memory mapping and hierarchies, concepts of cache and virtual memories, storage systems, standard local buses, high-performance I/O, computer communication, basic principles of operating systems, multiprogramming, multiprocessing, pipelining and memory management. The architecture principles underlying RISC and CISC processors are presented in detail. The course also includes a number of design projects, including simulating a target machine, architecture using a high-level language (HLL). (Prerequisites: Undergraduate course in logic circuits and microprocessor system design, as well as proficiency in assembly language and a structured high-level language such as C or Pascal.)
Introductory ECE Graduate Courses (cont.)

• ECE 506. INTRODUCTION TO LOCAL AND WIDE AREA NETWORKS

This course provides an introduction to the theory and practice of the design of computer and communications networks, including the ISO seven-layer reference model. Analysis of network topologies and protocols, including performance analysis, is treated. Current network types including local area and wide area networks are introduced, as are evolving network technologies. The theory, design and performance of local area networks are emphasized. The course includes an introduction to queueing analysis and network programming. (Prerequisites: knowledge of the C programming language is assumed. CS 504 or ECE 502 or equivalent background in CS 5084 or CS 584.)
Most Commonly Used ECE Graduate Forms

- **Graduate Petition Forms** – These forms are needed for students with extenuating circumstances when approvals are needed from the graduate program committee. (i.e. academic probation or suspension from the graduate program, transfer of credits for graduate courses, etc.)

- **Transfer Credit Authorization Forms** – needed when transferring courses taken at other institutions into student’s degree program - grade received must be a B or better and can only transfer up to 9 credits [3 courses] and must be equivalent to those offered at WPI.

- **Change of Status Form** – needed if changing status from full-time to part-time or changing degree program from MS to MENG or vice-versa.

- **TA Time Commitment Worksheets and Research Summary Forms** – Students who have been awarded a department TA position will need to fill out the TA Time Commitment Worksheet form with the instructor for the course they will be a TA for in order to define what their TA responsibilities will be for that particular course. Research Summary Forms must be filled out by all department funded TA’s at the end of the semester that they are a TA, summarizing their current research and listing the courses they took for that semester. Once complete, this form will need to be signed by the student’s research advisor and submitted to Colleen.
PhD Forms

• Research Committee Forms are completed once a PhD student has selected their research advisor, which is usually by the beginning of the student’s second semester in the PhD program and must be filed with Colleen in the ECE office prior to taking their Diagnostic Exam.

• Diagnostic and Area Exam Forms are to be completed once the PhD student has completed each of these exams. Colleen will send a hard copy of the completed forms to the registrar’s office and will keep the original in the student’s file in the ECE office.

• The PhD Timeline*, shown on the following slide, gives PhD students an idea of the amount of time it should take for them to complete the various stages of their degree program.

(*Please note that the information listed on this timeline is subject to approval by the student’s research advisor).
ECE Research Labs & Directors

- **Applied Crypto and Secure Embedded Systems Laboratory**
  *Director: Professor Thomas Eisenbarth*

- **Antenna Laboratory**
  *Director: Professor Sergey Makarov*

- **Center for Advanced, Integrated, Radio Navigation (CAIRN)**
  *Director: Professor William Michalson*

- **Center for Wireless Information Network Studies (CWINS)**
  *Director: Professor Kaveh Pahlavan*

- **Cryptography and Information Security (CRIS) Laboratory**
  *Director: Professor Berk Sunar*

- **Embedded Computing Laboratory**
  *Director: Professor Xinming Huang*

- **Laboratory for Sensory and Physiologic Signal Processing (L(SP)2)**
  *Director: Professor Edward A. Clancy*
New England Center for Analog & Mixed Signal Design (NECAMSID)
Director: Professor John McNeill

Precision Personnel Locator Project (PPL)
Directors: Professors David Cyganski and R. James Duckworth

RF-Electronics and Medical Imaging Laboratory
Director: Professor Reinhold Ludwig

RIVeR Lab
Director: Professor Taskin Padir

Signal Processing and Information Networking (SPIN Laboratory)
Director: Professor Donald Brown

Ultrasound Research Laboratory
Director: Professor Peder C. Pedersen

Wireless Innovation Laboratory (WI Lab)
Director: Professor Alexander Wyglinski
Research Assistants* – Please visit ECE’s research pages (http://www.wpi.edu/academics/ece/research.html) for information on the department’s research labs and to check for open RA positions.

Teaching Assistants and Graduate Tutor Positions* – Students interested in TA or tutor positions should contact Professor John McNeill and let him know which classes you would be interested in being a TA or tutor for as well as the grades you received for these classes. These positions are usually assigned mid-summer for fall openings and the end of fall semester for spring openings.

Graduate Internships – Students are responsible for obtaining their own internship positions and will need to fill out CPT forms (for international students only). Start and end dates must follow the academic calendar and are only allowed for paid positions. Students should speak to their advisors in regards to what evaluation materials will need to be submitted at the end of their internship.

*New students who will be working for the department as an RA or TA should see Colleen in the ECE office for additional information about paychecks, forms, etc.
Why do I need an academic advisor?

Advisors can answer questions you may have regarding courses, course prerequisites or research opportunities, as well as any questions you may have about your graduate program. They can also help with other problems that may arise that may require a graduate petition that would need their approval.

How do I know if I have been assigned an advisor?

Please see Colleen Sweeney in the ECE office if you haven’t done so already, and she will let you know who your advisor is and how to contact them.

Am I allowed to change my advisor? What is the process?

If for any reason, you decide to change your academic advisor, please see Colleen in the ECE office and she will assign you a different advisor and will update your file accordingly.

If I decide to do research with a different faculty member than my advisor, can I use my research advisor as my academic advisor?

Students can use their research advisor as their academic advisor for their degree programs but they should contact Colleen to let her know so this change can be noted in your file.
Department Policies and Expectations on Academic Honesty

The following slides are a review of what the ECE Department refers to as academic dishonesty as well as the procedural flowchart for dishonesty violations.
What is considered academic dishonesty?

- **Fabrication** *(examples)*
  - Altering grades or other official records
  - Changing exam solutions after the fact
  - Inventing or changing laboratory data
  - Falsifying research
  - Inventing sources
  - Sabotaging another student’s work or academic record

- **Plagiarism** *(examples)*
  - Misrepresenting the work of another as one’s own
  - Inaccurately or inadequately citing sources, including those from the Internet

*Text taken from WPI handbook “Student Guide to Academic Integrity”*
• **Cheating** *(examples)*
  - Using purchased term papers
  - Copying exams, homework, or take-home exams
  - Using unauthorized materials or sources of information *(e.g., cheat sheet, preprogrammed calculator)*
  - Assisting another person in cases where prohibited

• **Facilitation** *(examples)*
  - Sharing test questions or answers from an exam with another student
  - Letting another student copy a solution to a homework problem, exam, or lab
  - Taking an exam for another student
  - Assisting in any act of academic dishonesty of another student

*Text taken from WPI handbook “Student Guide to Academic Integrity”*
WPI’s Procedural Flowchart for Academic Dishonesty Violations*

Professor suspects student of academic dishonesty

Professor confers with Department Head

Checks with Dean of Students for previous record

Previous record

optional

CAMPUS HEARING BOARD

Student found not responsible
CASE CLOSED

Student found responsible

Decision and sanction letter sent

Student does not admit

Meet with student:

Student admits and accepts sanctions

Student signs letter

Copy of letter sent to Dean of Students
CASE CLOSED

PRESIDENTIAL APPEALS BOARD

Student does not appeal
CASE CLOSED

Student appeals

Appeal denied, decision upheld
CASE CLOSED

Appeal accepted

Sanction modified
CASE CLOSED

Case remanded to CHB for re-hearing

(Flowchart from pg. 7 of WPI handbook "Student Guide to Academic Integrity")
Printing Services

- ECE Students are allotted $10 each month for printing (.10 per page for B & W or .30 per page for color copies.). Should you incur a negative balance before the end of the month you will not be allowed to print again until this balance has been paid in full. Negative balances can be paid through the ECE office (CASH ONLY!). Please see any of the ECE secretaries for assistance.

(It is important to note that any department printing money left in printing accounts at the end of the month will not roll over, although paid into a printing account by a student that has not been used, automatically rolls over.)

ECE Students can make copies as well as scan or fax documents in the ECE office. (Printing Fee: B & W – 10¢/pg. and Color - 30¢/pg. Scanning & faxing options are free).

- ECE Plotter – The office plotter can print posters up to 24” wide for students and faculty who need research posters printed for conferences or for other research events on campus. (Free for ECE students and faculty only. Students from other departments will be required to pay for poster printing - usual cost of a 24 x 36 inch poster is $12) Please see Colleen or Shannon in the ECE office for more information.
Mail and Package Services

- Students that will have packages or letters mailed to WPI for them should make sure that the following information is included: (Student’s Name, ECE Department, WPI, 100 Institute Road, Worcester, MA 01609) Packages or letters that do not have this information will be sent back as undeliverable and will be returned to sender.

- Postage – students in need of postage for sending letters or small packages can bring them to the ECE office to be stamped (CASH ONLY).

- UPS drop off – students having packages shipped UPS can bring them to the ECE office mailroom for pick-up. Be sure that the UPS label is attached!

- Federal Express packages – students can send out fed ex packages through the ECE office once they have filled out the appropriate form. Please see one of the secretaries in the office for more information.

Graduate Student Mailboxes

- Colleen will send an email to the ECE grad students once the the fall semester has begun in regards to mailboxes for the current academic year (*RA’s and TA’s will have mail slots assigned to them in the ECE office mailroom.*)
1. 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.

The total number of tuition credits needed for the MS program is 30 credits. On average, a full-time MS 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.

The Ph.D. program requires students to complete 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 has completed each semester.
2. Are grad students allowed to take undergraduate courses for graduate credit?

Graduate students are allowed to up to two 4000-level ECE courses that can be used towards their graduate course requirements. The credit hours will then be adjusted/converted from 3.0 to 2.0 for the graduate credit. It is important to note that graduate students cannot register for undergraduate courses because of their level restrictions and will need to contact Jeannette Dailida (jdailida@wpi.edu) in the registrar’s office in order to register for these courses. See below for further instructions.

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

Please contact Jeannette Dailida (jdailida@wpi.edu) in the registrar’s office to register for these credits and provide her with the following information:

- Your name and ID number
- The type of credits you are registering for
- The number of credits you are registering for
- The name of your research advisor
4. What is the department’s policy regarding internships and is it possible to register for tuition credits during the semester that the internship takes place?

*Students who are offered internship positions during the academic year must follow WPI’s academic calendar regarding the internship’s start and end dates and will need to register for ECE 597 for zero credits. Students should also submit an updated program of study form which includes the internship credit. Internship positions must be directly related to the student’s graduate program and the courses listed on their plan of study form.*

At the end of their internship students will need to submit a paper (5-10 pgs.) to their advisor summarizing the details of their position along with the contact information for their supervisor so that the student’s advisor can verify the summary details.

*(Please note: Student’s working full-time for an internship will not be allowed to register for any additional course credits during the semester they are interning and students working 20 hours or less per week will only be allowed to register for no more than two courses (6 credits) as long as the internship complies with the courses on the student’s plan of study form.)*
International students who are offered internship positions must fill out a CPT (Curricular Practical Training) form along with an updated program of study form with the internship credit listed. Both forms will need to be signed off by the student’s academic advisor then brought to Colleen in the ECE office so that she can make copies that will be put in the student’s file. Then the completed forms will need to be brought to the International House for processing.

5. 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.
6. What if I fail a course or end up on academic probation?

Failed courses will have a definite impact on a student’s GPA but as long as they maintain a 2.76 GPA they will be allowed to register for additional courses in order to improve their GPA and meet the 3.0 GPA requirement for graduation and the grade for the failed course remains on the student’s transcript.

Students who end up with a CQPA (Cumulative Quality Point Average) at the end of the semester of 2.65 or below, will be put on a Pass/Fail basis for any courses they take. Before a student is able to receive letter grades again they will need to submit a Graduate Petition Form explaining the reasons for their poor academic performance. The completed form should be submitted to Colleen in the ECE office and she will forward the petition to ECE’s GPC Committee for review.

7. What are the graduate seminar course requirements?

Full-time ECE graduate students are required to pass two semesters of ECE Graduate Seminar for the MS, MENG and PhD degree programs and BSMS students are only required to pass one semester of graduate seminar.
9. Where can I find a listing of ECE’s course schedules for the upcoming academic year?

All course schedules past and present can be found on the registrar’s web pages under “Registration and Classes” in the left hand menu.

10. 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 before the deadlines listed on the application for graduation forms (October - before July 1st, February - before October 1st, May - before February 1st).

11. How do I reserve an ECE conference room?

Atwater Kent conference rooms are available for student’s to reserve for help sessions, meetings, etc. Please email ecesec@wpi.edu or stop by the ECE office and one of the secretaries will be able to assist you with your request. If you send an email, please include the day, time and room number that you wish to reserve and we will book it for you if it is available.
12. What is the process for ordering a key for a research lab or grad office?

Since most of the research labs now have key pads that require a special pass code in order to open the doors, keys are not usually needed any longer in Atwater Kent. If your research advisor’s lab does require a brass key, you will need to see Colleen in the ECE office and she will order you a key once she has confirmed this request with your advisor.

A $25.00 key deposit is required for any keys that are signed out by students and will be refunded once they have been returned to the ECE office.
Thank you for attending today’s information meeting*

We look forward to helping you achieve your academic goals!

(*Please Note: Today’s presentation slides will be posted on our ECE web page under “Graduate Programs” for students to reference.*)