

ECE Graduate Student Orientation

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Web Page: www.engr.uky.edu/~gedney/DGS

Department of Electrical and Computer Engineering

Outline

- Welcome
- Academic Advisor and Committees
- Course Requirements
- Course Registration
- Academic Progress
- Financial Support
- Important Paperwork
- Graduate Student Reference Material



Academic Advisor

Academic Advisor

- For either the MS or PhD, you need to have a permanent research/academic advisor
 - Find an adviser early (first or second semester)
 - Choose an advisor based on the area of specialization of interest to you
- **Advisors Role:**
 - Guide you with course selections, research topic, goals
 - Provide you with research assistantships, fellowships
 - Serve as the chair of your MS or PhD committee
- **DGS Role:**
 - Administrative types of issues
 - Default advisor for course selection before the permanent advisor is found.

Research Areas

- Micro-electronics
 - Profs Chen, Lumpp (JK) Singh, St. Omer
- VLSI
 - Prof Elias
- Electro-optics
 - Prof. Hastings
- Electromagnetics
 - Profs Adams, Gedney, Lu, Smith, Young
- Computer Engineering
 - Profs Dietz, Heath, Lumpp, Qiu, Ashley
- Communications
 - Profs Donohue, Hassebrooke
- Signal Processing
 - Profs Cheung, Donohue, Hassebrooke, Lau
- Controls
 - Profs Walcott, Zhang
- Electromechanics
 - Profs Cathey, Cramer, Liao, Doloff
- Power Electronics
 - Prof. Cramer, Sottile
- Manufacturing Systems
 - Profs Holloway, Zhang
- Nano-technology
 - Profs Chen, Lumpp (JK), Lodder, St.Omer, Singh
- Visualization
 - Profs Cheung, Hassebrooke, Lau
- PEIK
 - Profs Holloway, Liao, Sottile, Dolloff, Cramer

Course Requirements

Core Courses

- **All** graduate students (MS and PhD) must satisfy the core course requirement: You must take or have equivalent for at least 3 of the following courses:
 - EE 611 Deterministic Systems (**Fall**)
 - EE 621 Electromagnetic Fields (**Fall**)
 - EE 640 Stochastic Systems (Spring)
 - EE 661 Solid-State Electronics (Spring)
 - EE 685 Digital Computer Structure (**Fall**)
- PhD students must score B or better in core courses

MS – Thesis Option Course Requirements

- 24 hours of required graduate course work (EE 500 level, 600 level (including 3 core courses), EE783, or 4XX-G *from other departments*)
- At least 1/2 must be at the 6XX level or EE783
- EE 783 (Independent study) –
 - Allow 3 hours of EE 783 towards MS
 - Enrollment form found at: www.engr.uky.edu/~gedney/DGS/currentGrads
- At least 2/3 must be EE courses
- After your course work is completed, you must enroll in EE 748 (MS Thesis Research) (0 hours).
 - Enrollment forms found on the DGS web site.

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"Mrs. Wayne was so excited about getting her masters in physical science, she took a quantum leap!"

MS – Thesis Option

Time Line

- Course Requirements – 2 Semesters
 - 3 semesters if you are a full time RA or TA
- Thesis – 6 to 12 months
- Final defense
 - 2 weeks prior to your oral defense you need to:
 - Submit a final exam request form to the Graduate school
 - Identify 3 committee members (your advisor should be the chair of the committee, plus two additional EE faculty (can also be non-EE faculty, but should be full members of the Graduate Faculty at UK).
 - Submit your written thesis to your committee prior to your defense.
- You should be able to complete your MS in 2 years or less
- Tips:
 - Find an advisor early
 - Begin your thesis topic as early as possible
 - Keep yourself (and your advisor!) focused



MS – Project Option

Project & Time Line

- Course Requirements (30 hours) – 3 Semesters
- Student must register for EE 784 the semester they will complete their project
 - EE 784 is a 3 hour course (not included in your 30 hours), and receives a letter grade
 - Registration form found at: www.engr.uky.edu/~gedney/DGS/currentGrads
- Oral Project Defense
 - Must be taken during the semester you register for EE 784. You must also submit a final defense form to the Graduate School. This also requires 3 faculty committee members (your advisor should be the chair of the committee).
- Total Time: An MS Project can be completed in 2 years for full time students.
- Tips:
 - Identify an advisor you can work with
 - Outline your project topic with the advisor, and make sure it can be completed in 1 semester.
 - International students: Must maintain 9 hours of credit every semester until finishing MS Project, including EE 784

PhD Course Work

- PhD students in EE must complete 42 hours of course work prior to taking their qualifying exam
 - 500, 600, and 700 level courses (including 3 core courses)
 - At least half of the courses must be 600 level or higher.
 - At least 2/3 of the courses must be in EE
 - Highly recommended you take some non EE 600-level courses (Math, Physics, Engineering,...)
 - All PhD students must fulfill the technical writing requirement (Eng 204)
- PhD students with MSEE degree
 - MSEE + 24 hours of course work
 - 18 hours if you have a US accredited MS degree



PhD Qualifying Exam



- Written Qualifying Exam
 - Scheduled through the DGS
 - Must be passed by the end of your 3rd semester
 - Exam can be taken a maximum of 2 times
 - Exam is offered 2 times per semester (Fall/Spring)
 - Content
 - Basic circuit theory (EE211/221), Logic (EE 280), Linear Systems (EE 421), Ethics
 - Choose three topics prior to the exam:
 - Semiconductor Devices (EE 360), Computer Organization (EE 380), Electromechanics and Power (EE 415), Analog Electronics (EE 462), Electromagnetics (EE 468), Computer Architecture (EE 480)
- MS Students with non EE degree are welcome to take QE to fulfill EE core requirements.

Department of Electrical and Computer Engineering

PhD Qualifying Exam

- Oral Qualifying Exam
 - Scheduled through the Graduate School
 - Must be taken within 2 semesters of completing coursework
 - Administered by your PhD Advisory Committee
 - Purpose
 - Evaluate student's ability to conduct research
 - Evaluate the depth of knowledge in the student's field of research
 - Outline
 - Committee assigns research topic to PhD student
 - Student completes:
 - Written proposal on the topic
 - Oral presentation of their proposal
 - Question/Answer period defending proposal
 - More information:
 - <http://www.engr.uky.edu/~gedney/DGS/currentGrads/QE.html>

Academic Advisor and Committees

PhD Committees:

- Your advisor (chair if having full graduate faculty status) plus at least 3 other faculty
 - One member must be from outside ECE
 - Best way to identify outside member is to take courses outside of EE!
- All faculty must have Graduate Faculty Status with at least 3 (including the chair) having Full Graduate Faculty Status
- Must be set before the request for qualifying examination form is filed

Role of the PhD Advisory Committee

- The committee has the following roles:
 - Pre-Qualifying exam
 - Direct the student in a course curriculum that will provide them with a sufficient foundation to pursue their research in the field of interest
 - Qualifying Exam
 - Administer the oral qualifying exam
 - Determine if the student is sufficiently prepared academically to continue with dissertation research
 - Determine if the student's proposed research plan is sufficient for a PhD
 - Conduct Annual Reviews

PhD TimeLine



- Complete course work (1 year post MS)
- Written Qualifying exam (2nd and 3rd Semester)
- Oral Qualifying Exam (3rd or 4th Semester)
 - Should EE 767 the semester the qualifying exam is administered
 - Register for EE 767 every semester post qualifying
- Dissertation research (1 to 2 years)
 - Submit NOTIF to graduate school 6 weeks prior to expected defense date
 - Schedule the final exam a minimum of two weeks prior to the exam date.

PhD Annual Review

- Ever PhD Student must be reviewed annually by their PhD advisory committee
 - Purpose: Review the progress of the PhD student and provide constructive feedback
- Two components:
 - Formal written summary of the students research
 - Ideally should form a framework for the dissertation
 - Formal presentation before advisory committee
 - Provide overview of research objectives, accomplishments, future work, and timeline
- Notes:
 - First year PhD students must also take annual review
 - No adviser or committee? – DGS
 - Oral qualifying exam serves as an annual review

Academic Progress

(All PhD&MS Students)

- Must maintain at least a 3.0 grade point average to avoid probation
- If you are on probation, you have 9 hours to raise your GPA to > 3.0 before being dismissed from Graduate School
- Graduate students are allowed one course “repeat” option
- Remedy: Avoid any C or lower!!



"An excellent defense. Let's give her the doctorate."

Graduate Student Support

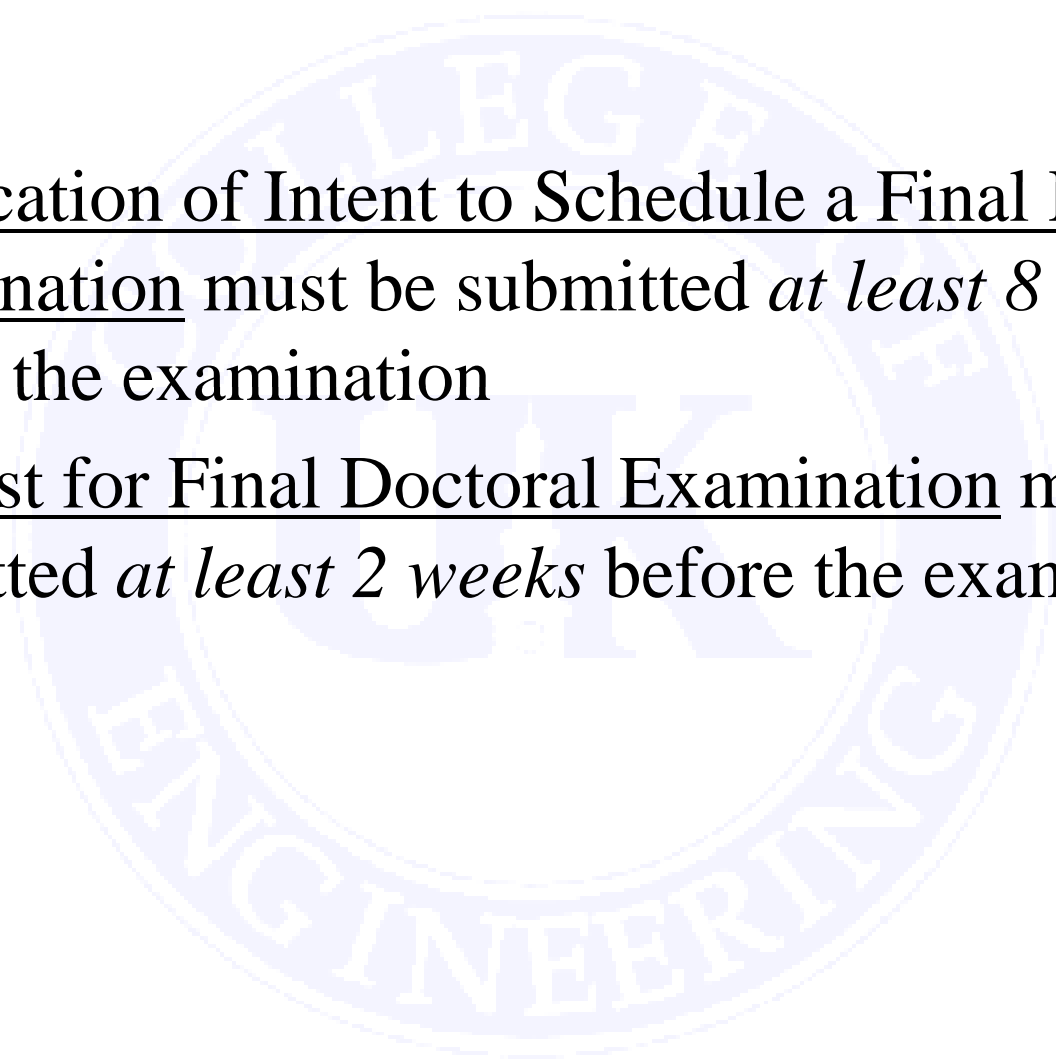
- Graduate School Fellowships: most competitive (typically for highly qualified domestic students or extraordinary international PhD students)
 - College Fellowships and University
- Teaching Assistantships are in short supply and very competitive: for PhD students
- Research Assistantships: contact individual professors
- Power and Energy Institute of Kentucky (PEIK)
 - Tuition scholarships
- Travel Support to Attending Conference: \$400

Maintaining Support

- TA, RA, Fellowship: 3.0 or higher
 - TA will be lost if a grade of C or lower is received
- Engineering fee: no support

Important Paperwork

- Recommendation for a final examination and the Thesis approval form must be filed with the Graduate School *at least two weeks* prior to the date of the examination for Master's students.
- Application for Degree Cards in the Graduate School must be submitted within *30 days* after the beginning of the semester (15 days in the summer session) in which they expect to graduate.
 - myuk account

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- Notification of Intent to Schedule a Final Doctoral Examination must be submitted *at least 8 weeks* before the examination
 - Request for Final Doctoral Examination must be submitted *at least 2 weeks* before the exam

Graduate Student Reference Material

Here are some important web sites

- <http://www.engr.uky.edu/~gedney/DGS/DGS.htm>
- <http://www.research.uky.edu/gs/>
- <http://www.research.uky.edu/gs/bulletin/bullinfo.shtml>
- <http://www.research.uky.edu/gs/gsforms.html>
- www.engr.uky.edu/ece/index.html

700-Level Courses

- EE 748 – Masters Thesis Research in EE (0-hours)
 - MS Thesis Option – taken after completing coursework.
 - Register every semester in EE 748 until completed
 - 0 hours of EE 748 is considered full time
- EE 784 – Masters Research Project (3 hours)
 - Taken after completing 30 hours (or in conjunction with last one or two courses to complete 30 hours)
 - Taken only once
 - Requires signed agreement between student/adviser submitted to DGS
 - Schedule MS project defense at the end of the semester
 - Failing to do so will result in an “I” or “E”, based on recommendation of the adviser.

- **EE 767 – Dissertation Residency Credit (2-hours)**
 - Take every semester after you complete all the qualifying exam requirements until you graduate
 - Can be taken the semester you take your oral qualifying exam
 - CAN-NOT be taken before your qualifying exam
 - Must have at least 2 semesters of EE 767 prior to defending dissertation
 - Full time status (2 hours of EE 767)
- **EE 790 – Research in Electrical Engineering (1 - 9 hours)**
 - Taken after completing course work, and before taking your oral qualifying exam.
 - Take up to 9 hours to maintain full-time status.
 - Maximum of 3 semesters allowed.
- **EE 783 – Independent Study (1 – 3 hours)**
 - 1 semester independent study project under guidance of an EE professor
 - Should be equivalent effort as a 1 semester EE course
 - Typically, research project in a specialized area not covered in a course offered
 - Should NOT be your RA work.
 - MS students: 3 hours max, PhD students: 6 hours max.
 - Requires signed agreement between student/professor submitted to DGS

Special Course Enrollment Forms

ECE DIRECTOR OF GRADUATE STUDIES - Mozilla Firefox
http://www.engr.uky.edu/~gedney/DGS/currentGrads/


should familiarize themselves with the criterion to be adequately prepared.

Side notes: Pre-qualifying PhD students must also complete an annual review. The topic chosen for the research summary should be chosen in consultation with the student's graduate advisor. The presentation should be no more than 30 minutes in length. An ad-hoc committee of three members should be formed, which does not require a faculty member from outside the ECE department. For qualifying year students (typically, second-year), the oral qualifying exam serves as the student's annual review.

Special Course Enrollment

- EE 748
If you need to request an enrollment in the zero hour course EE 748 Master's Thesis Research, you must complete the [Enrollment Request Form](#) for EE 748 and email the form to the [DGS](#) and cc: your advisor and Danielle Croon Hinkle (dgreen@engr.uky.edu) prior to the end of the registration period. The form must be signed by your advisor. Note that the maximum length of enrollment in EE 748 for full-time students is 3 semesters.
- EE 749
If you need to request an enrollment in the zero hour course EE 749 Dissertation Research, you must complete the [Enrollment Request Form](#) for EE 749 and email the form to the [DGS](#) and cc: your advisor and Danielle Green-Hinkle (dgreen@engr.uky.edu) before the first day of the semester.
- EE 767
PhD students should enroll in this course only AFTER they have completed and passed their Qualifying Exam requirements. PhD students must enroll in EE 767 (2 credit hours) every semester thereafter until they complete their PhD in order to remain in good standing. A student may register for EE 767 the semester they expect to complete their Qualifying Exam. If the student fails to complete their Qualifying Exam requirements that semester, they must drop EE 767. Initial enrollment in EE 767 can be applied for by submitting the [EE 767 registration form](#) to the [DGS](#). The DGS office will automatically enroll students in EE 767 each semester thereafter.
- EE 783
Registration for Special Problems in Electrical Engineering is done directly by the student. However, students must complete the [departmental form](#) for this course if they are to receive a grade for it. MS students can take one 3 hour EE 783 course towards their degree. PhD students can take up to two EE 783 courses towards their qualifying course credit hours.
- EE 784
(3 hours) must be taken by students who are completing the MS with the project option (Plan B). The MS student can enroll in EE 784 only after completing their 30 hours of course work, including the 3 core graduate level courses. The MS project should be a 1 semester project completed by the student under the advise of their academic advisor. The student must form a MS committee of 3 faculty members, and defend their project during the semester they have enrolled in EE 784. They must also complete their project according to the Graduate Bulletin guidelines. The student must meet with the DGS before he/she registers for the Research Project in Electrical Engineering course. To enroll in EE 784, submit the [EE 784 registration form](#) to the [DGS](#).

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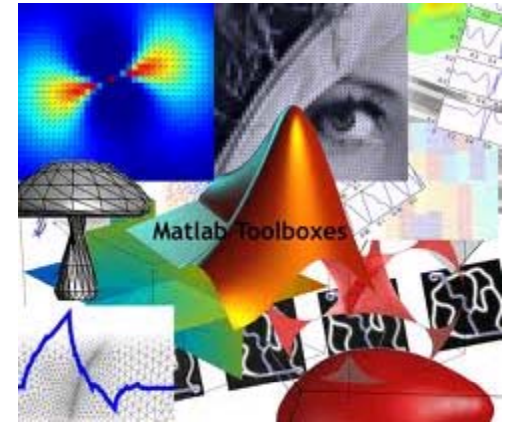


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Other Useful Tools

- Software
 - Matlab (College License)
 - Labview
 - Maple (University)
 - Engineering Launchpad (<http://www.engr.uky.edu/launchpad/>)
 - MS software (OS, Office, VisualStudio), Linux, etc.
- Computing
 - Engineering Computing Office (280 FPAT)
 - Sign up for Engineering Account
 - Locker, engineering email, Linux servers
 - Link Blue Account
 - Myuk, University Email services, Wireless Service
 - HPC Center
 - DCX Cluster
 - Computer Labs (FPAT, OHR, RGAN)



Engineering Library

- Third Floor of FPAT
- Electronic Journal Subscriptions
 - IEEE Xplore (ieeexplore.ieee.org)
 - Full subscript (all IEEE periodicals & conference proceedings)
 - John Wiley, Elsevier Science, etc.
- ISI Web of Knowledge (www.isiknowledge.com)
 - Literature Search
 - 1000's of journals, full citation indices
 - Invaluable resource for completing research
 - Electronic access and interlibrary loan

Questions

