ECSE Graduate Programs

Prof. K. S. Vastola

ECSE Graduate Program Director (GPD)

August 24, 2016
JEC 6012 is the ECSE Student Services Office
ECSE Grad Program People

- Prof. K.S. Vastola, Graduate Program Director
  - JEC 6003, X6074, vastola@ecse.rpi.edu

- Priscilla Magilligan, Graduate Program Secretary
  - JEC 6012, X6225, pris@ecse.rpi.edu
  - Priscilla is your starting point for all grad program matters.

- Ronnie Rowe, Graduate Program Administrator
  - Student Services, Mgr. Grad Admissions & Aid.
  - Ronnie left this summer. We hope to replace her soon.
ECSE Student Services Office

- Role of our Office (JEC 6012)
  - Central Office for questions, information, and forms.
  - Supports students from the time of admittance to the completion of their degree.
  - Fosters a supportive, stable, and inclusive environment.
  - Communicates Institute and Department policies.
Benefits

- Students have one point of contact for all matters.
- Students have reassurance that there is someone on campus who has their best interest in mind.
- Serves as a sounding board for student’s issues and concerns.
Agenda

- ECSE Grad Program People.
- Are You Properly Registered?
  - Plan of Study for your degree.
- ECSE Master’s Program
  - MS, MEng, Co-Terminal.
  - Meeting just on this at 1pm today, JEC 6309.
- ECSE Doctoral Program
  - Meeting just on Doctoral Program (esp. DQE) next Wednesday (8/31, 4pm, JEC 3117).
Types of Graduate Students

- Grad students admitted to ECSE with a BS or Master’s are pursuing one of these degrees:
  - Master of Science (MS)
  - Master of Engineering (MEng)
  - Doctor of Philosophy (PhD)
  - Masters students may eventually pursue a PhD (but must apply again to become a PhD student).

- We also have “Co-Terminal” grad students who are RPI undergrads pursuing an MEng or MS jointly with their BS.
  - Co-Terminal students follow all the rules for their master’s plus a few extra.
Every grad student at RPI must have a Plan of Study (PoS) on file with the Grad School (OGE).

Must submit PoS (and worksheet for Master’s, see ECSE website) directly to Priscilla:

- **New Master’s & Doctoral Students**: before the end of this semester, e.g. by 11/22/2016.
- **Co-Terminal Master’s Students (1st revised PoS)**: By the end of this year, i.e. by 5/1/2017.

You can revise and update your PoS thereafter.

- Multiple times, if necessary, no problem.

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Milestones & Paperwork

- Everything we discuss here today is very important.
- You must follow these rules, fill out these forms, and do well in your courses, exams and assistantship in order to make good progress in your degree, remain a graduate student in good standing, and retain/obtain financial aid.
- If you think you will not be able to meet some deadline or goal, please speak to one of us as early as possible.
- Problems caught early can usually be resolved more favorably for you.
An Assistantship is a Job

- Treat it like you would any professional job:
  - Show up on time.
  - Do the work thoroughly and completely.
  - If you cannot for any reason, you must communicate with your professors.

- RAs: If you need some time off, even during a break, discuss it with your advisor well in advance.

- TAs: You must be available throughout the semester, and you cannot leave for break without checking when the final grading will be done.

- TA Best Practices Session tomorrow, 2-4pm, JEC 6309. Attendance is required for TAs!
Are You Properly Registered?

(Essential if you want to be a student and get paid)
Why is this important?

- Your financial aid cannot be entered into the system until you are registered.
- Delays in registering mean delays in getting paid.
- RAs must do this quickly just to get paid on time.
- TAs for the same reason AND …
  - you must turn in your fall class schedules to Priscilla by noon Friday.
  - Then Prof. Saulnier can make a TA schedule which does not conflict with your course schedule.
  - You will receive your assignment by email.
Per Semester Load:

- Minimum 12 Credits, Maximum 15 Credits
  - Definition of full time, including RAs!
  - Only Exception: TAs, Minimum 9 credits!
  - Critical, esp. for a student on a visa!

- Co-Terminal: Minimum 12, Maximum 21 Credits
  - Subject to UG rules in this case.
  - BUT grad courses are much harder than undergrad courses, so this max should drop if you are including grad courses.
ADD/DROP Deadlines

- Be mindful of ADD/DROP Deadlines (no Late ADDS/DROPS allowed)
- Add deadline: September 12, 2016.
- Drop deadline: October 21, 2016.
- Note drop date is much later, but you cannot drop a course if it lowers your load below 12 credits (9 for a TA).
- Deal with this by registering for 15 credits.
- Note many Math courses are 4 credits!
  - $15 - 4 = 11 < 12$ Do the math...carefully!!!
Mercer Distinguished Lectures

- Attendance is mandatory!
- Refreshments: 3:30pm; Lecture: 4-5pm; DCC-324
- 9/21: Steven DenBaars - Recent Advances in LED and Laser based Solid-State Lighting
- 10/12: Magnus Egerstedt - Swarm Robotics
- 10/26: Henny Admoni - Recognizing Intent from Human Behavior for Assistive Robotics
- 11/9: Dimitris Pavlidis - High-Frequency Electronics/ Optoelectronics; Nanotechnology and Sensors
- 11/30: P. R. Kumar - The Prices of Packets and Watts
- 12/12: Timothy Slegel - IBM z13 Processor and Cache Subsystems
ECSE Master’s Programs
ECSE Master’s Degrees

- Master of Science (MS) with or without Thesis
  - MS in Electrical Engineering
  - MS in Computer and Systems Engineering
- Master of Engineering (MEng)
  - MEng in Electrical Engineering
  - MEng in Computer and Systems Engineering
- Any of these can be used for Co-Terminal, but MEng degrees are most typical.

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Differences Among Degrees

- MS vs. MEng matters a lot in PoS requirements.
- EE vs. CSE doesn’t matter in PoS Requirements, just area of concentration/research:

**EE**
- Microelectronics
- Electronic Materials
- Electromagnetics
- Nanotechnology
- Energy
- Power Electronics
- Photonics

**Either**
- Controls
- Signal Processing
- Telecommunication
- Computer Hardware
- Electronic Circuits
- Energy Systems

**CSE**
- Computer Systems
- Computer Graphics
- Computer Networks
- Wireless Networks
- Robotics
- Imaging
Master of Engineering

- Preparation for Professional Practice
- Semesters to complete: 2 possible w/ heavy load; 3 semesters more typical.
- 3-Course Technical Concentration.
- 2-Course Non-Technical Sequence.
  - MGMT/ECON courses encouraged.
- Max time period 2-1/2 yrs (Grad School Policy).
- Professional Master’s Project an option but not typical (need a voluntary Advisor for this).
- Academic Advisor = an ECSE Faculty or GPD.
Master of Science with Thesis

- Preparation for Research Career and/or a PhD
- Emphasis on depth in research area.
- 3 semesters to complete (recommended).
- Max time period 2.5 yrs (Grad School Policy).
- Master’s Thesis required: Need 6 (or 9) credits of ECSE-6990 MS Thesis in your PoS.
- Must publicly present master’s thesis research, with Committee (3 ECSE faculty) sign off (even if also pursing a PhD).
- Academic Advisor = Research Advisor.
Master of Science w/o Thesis

- New this year.
- In between the previous two: Focus on engineering and science, but not research.
- Semesters to complete: 2 possible w/ heavy load; 3 semesters more typical.
- Max time period 2.5 yrs (Grad School Policy).
- Professional Master’s Project an option but not typical (need a voluntary Advisor for this).
- **Academic Advisor =** an ECSE Faculty or GPD.
Co-Terminal MEng

Identical to MEng, except:

- PoS must reflect completion by end of Year 5 (that is, 1 AY after your normal 4-Year BS).
- ECSE strongly recommends, at least 6 Master’s PoS credits by end of Year 4!
- Please note you must receive both BS and MEng during the same graduation semester!
  - No “Early BS” graduation; or you will be removed from the Co-Terminal Program.
- Academic Advisor = Undergraduate Advisor.
Co-Terminal MS w/o Thesis

Identical to MS w/o Thesis, except:

- PoS must reflect completion by end of Year 5 (that is, 1 AY after your normal 4-Year BS).
- ECSE strongly recommends, at least 6 Master’s PoS credits by end of Year 4!
- Please note you must receive both BS and MS during the same graduation semester!
  - No “Early BS” graduation; or you will be removed from the Co-Terminal Program.
- Academic Advisor = Undergraduate Advisor.
Co-Terminal MS with thesis

Identical to MS, except:

- Need an existing Research Advisor, who fully endorses PoS Completion by end of Year 5 (1 AY after your normal 4-Year BS).
- ECSE strongly recommends at least 6 Non-Thesis Master’s PoS credits by end of Year 4!
- Please note you must receive both BS and MS during the same graduation semester!
  - No “Early BS” graduation; or you will be removed from the Co-Terminal Program.
- Academic Advisor = Research Advisor.
Masters Program Meeting

- Today at 1pm in JEC 6309.
  - In JEC, room number 63XX means 6th floor, 3rd side corridor.
  - 60XX would be in the main corridor.

- There are more rules for these Master’s degrees which affect your registration for this Fall semester and your plan of study.

- We will review these rules and go into detail on completing your Plan of Study, so that you can register correctly this week.
ECSE Doctoral Program
ECSE Doctoral Degrees

- Doctor of Philosophy Degrees:
  - PhD in Electrical Engineering
  - PhD in Computer and Systems Engineering
Doctor of Philosophy (PhD)

- Preparation for a Research Career (in Academia, Government, or Industry).
- Emphasis on depth in research area.

1. Find a Research Advisor.
2. Take DQE in 2\textsuperscript{nd} semester if admitted with Masters, in 3\textsuperscript{rd} semester if admitted with only BS.
3. Form Doctoral Committee.
4. Pass DCE in 4\textsuperscript{th} semester of doctoral study.
5. Complete Thesis and pass Defense, with appropriate Committee sign off.
The purpose of the DQE is to determine the potential that you will be able to complete the Doctoral requirements, including original and independent research of high quality.

The DQE consists of 3 Parts:

- **4 Oral Exams**: 1 Basic Area Exam, 2 Major Area Exam, 1 Minor Area Exam.
- **Course Grades**: Your grades in courses taken at RPI. This serves as the “written” part of the DQE.
- **Research Advisor’s Recommendation**: Evaluation of your research-to-date.
DQE Areas

- **Basic Exam**: One area from the **Basic Group**.
- **Major Exams**: One area from the **Elective Group**.
- **Minor Exam**: One area from the **Basic or Elective Group**, not previously selected.

**Basic Group**
1. Physics
2. Mathematics
3. Computer Science

**Elective Group**
4. Circuits and Electronics
5. Control
6. Communications
7. Plasmas & Electromagnetics
8. Microelectronics Technology and Design
9. Computer Systems
10. Computer Design
11. Image Analysis & Computer Vision
12. Electric Power Eng’g
More detail on DQE at Doctoral Program meeting next Wednesday, 8/31, 4pm, JEC 3117.

The DQE is relevant today because you must register this week.

You should consider if you need to take one course to help you prepare for the DQE.

You must balance this vs. taking courses to prepare for research and not overloading yourself.

3 courses should be the max this semester if you have a TA or RA (the rest is thesis credits).
PhD continued

- PhD should take about 3 years beyond a Masters or 4–5 years beyond a BS to complete.
- Maximum time period is
  - 5 yrs after MS/MEng,
  - Or 7 yrs after BS if no Masters,
  - This is RPI Policy (not ECSE).
  - Extensions can be granted, but discuss with us as early as possible.
- Academic Advisor = Research Advisor.
Doctoral Requirements (New!)

72 Credit-Hour PhD Plan of Study (PoS)

- 48 credits beyond the Master’s Degree
- A relevant Master’s should be reflected in the 72-credit Doctoral PoS on one line worth 24 credits.
- It is counted as a 24-credit block at 6000-level in a 24-credit Doctoral PoS regardless of the actual number of credits earned in the Master’s.
- Doctoral Dissertation Credits account for time spent on research: 12 credit minimum / 36 credit maximum.
- You will have more than 72 credits at the end.
72 Credit-Hour PhD Plan of Study (PoS) continued

- Ratio of 6000-level to 4000-level Credits on 72-credit PoS must be 2 or greater.
- Maximum of 15 credits at 4000-level.
- Plan of Study (PoS) must be approved by your advisor, ECSE GPD, & Grad School.
  - After getting your advisor’s signature, give to Priscilla in JEC 6012.
- Minimum 3.0 GPA on all PoS courses to graduate.
- You must also take at least one Math course.
• **Written Thesis & Defense, w/Committee Sign-Off**
  - The heart of the PhD: Must contain a “substantial original contribution to knowledge.”
  - Proposal of research at Candidacy Exam (DCE) in front committee of 4 or more faculty.
  - Defense: Public presentation in front of committee. Must be open to anyone.
Additional Information
Important Links!

- **www.rpi.edu**
  - RPI Web Page

- **www.ecse.rpi.edu**
  - ECSE Web Page
  - Master PoS Files, a copy of these slides! ("academics" link)
  - Research Areas, Advisor Interests, etc.
Important Links!

- rpinfo.rpi.edu
  - Course Catalog
  - Institute Directory, Academic Calendar (Add/Drop Deadlines!), Final Exam Schedule, etc.

- sis.rpi.edu
  - Class-Hour Schedule
  - Special-Topics Courses and New-Course Descriptions, etc.
Questions?