

Graduate Screening Exam Handbook
Spring 2003- Edition
2004-2005

Introduction

The EE-EP Graduate Screening Exam handbook has been created to assist EE-EP students with their preparation for the graduate screening exam process.

Please note that the information described here pertains to the Electrical Engineering-Electrophysics Department Graduate Screening Exam only. The same procedures may not be in use in Electrical Engineering-Systems, nor does successful completion of the screening exam in EE-Electrophysics automatically substitute for the screening exam in EE-Systems, or vice versa.

If you have any questions, suggestions, or comments that would help to clarify any of the discussion in this handbook, please forward your ideas to Graduate Matriculation Committee c/o Shirin Mistry, PHE 610, smistry@usc.edu.

Section One

What is the *Electrical-Engineering Graduate Screening Exam*?

The Electrical Engineering-Electrophysics Graduate Screening Exam is an academic process that serves as an entrance exam for doctoral degree candidacy. It is the basis of your recommendation for formal acceptance into the Ph.D. program on behalf of the department to the Graduate School. The Graduate Screening Exam is mandatory for all admitted Ph.D. students in Electrical Engineering-Electrophysics, and is recommended for any Master's degree students who are planning on applying for the PhD degree in Electrical Engineering- Electrophysics at USC. This section describes the exam components and provides answers to some often asked questions.

There are three parts to this exam:

Part One: Satisfactory Academic Progress

An average GPA of 3.5 is required in core courses. Section two of this handbook explains and lists the core courses. This section also contains a description of each course with a discussion of the assumed background required to successfully complete each course. Additionally you are required to attend any EE-EP workshops and seminars that may be scheduled periodically during the period of your graduate study program.

If admitted to the M.S. program, a student may apply for admission to the Ph.D. program based on performance in the core courses, i.e. upon satisfying the requirements in this document. Successful completion of these requirements does not guarantee admission to the Ph. D. program, however. See your advisor or Shirin Mistry for clarification of this procedure.

Part Two: A commitment of academic support from your thesis advisor*

Review the research area of each professor in EE-EP and meet with him or her as appropriate to discuss your areas of interest. Section three of this handbook provides a list of professors and their areas of interest.

* Some students have advisors outside of EE-P. However, special permission for such advisement must be obtained from the EE-EP Graduate Matriculation Committee prior to your screening exam.

Part Three: Meeting with the Graduate Matriculation Committee

At the beginning of the academic year in which you intend to enter the screening procedure (the beginning of your graduate studies in EE for those who intend to pursue the Ph. D. degree) you will be expected to attend a meeting, conducted by the Graduate Matriculation Committee, of the students in the screening procedure. This meeting describes the

screening procedure and provides advisement on appropriate course registration. At this meeting you will complete a first year guidance form. In addition, you will have an individual meeting with a member of this committee annually as long as you are in the screening procedure. At this meeting your academic progress is reviewed. Additionally, you are given the opportunity to discuss your current coursework and preference as to potential thesis research advisor.

How and when can I sign up for the graduate screening exam?

Upon admission to Ph. D. program, you must sign up for this procedure by attending the annual screening exam meeting during your first fall semester of study. If you are unable to attend the meeting, you must make special arrangements with the department.

How should I prepare for the graduate screening exam?

To prepare for the graduate screening exam it is very important to make sure that you receive proper advisement. Make sure that you attend the meeting with the Graduate Matriculation Committee at the beginning of your first academic year in the program. One of the purposes of this meeting is to explain the assumed background for each of the core courses. This will enable you to determine whether or not you need to take an appropriate prerequisite course before a particular core course. Passing the screening exam requires a GPA of 3.5 or better in these core courses and you are only allowed to take each course once. It is important, therefore, that you have adequate academic preparation before signing up for a core course.

You should also be in the process of choosing a research direction. The screening procedure requires that you find a thesis advisor.

How do I pass the exam?

Just as there are three steps to the exam, there are three steps to prepare for it.

- (1) Complete the screening core courses with an average GPA that is at least 3.50. The GPA for the purposes of the screening exam will be calculated from the four highest grades in core courses taken in the first three semesters excluding summers after entering the screening procedure. In the event that your successful completion of these courses requires that you take appropriate prerequisite classes, adjustments can be made in the length of time nominally required for you to complete the entire screening process. If you have completed additional work since your admission file was processed, be sure to forward verifiable evidence of such work to the Department.
- (2). Make inquiries of faculty members with whom you prefer to work. During this phase of the process, ensure that your research file is continually updated.

- (3). Plan for the screening meeting, which should be perceived as an interview addressing academic progress to date. Think of possible questions you wish answered as well as questions that you feel may be asked of you.

How do I select a faculty advisor?

One of the most important parts of a faculty member's responsibilities is the guidance, mentoring, and involvement of graduate students in state-of-the-art research activities. They are available to work with students. You are encouraged to contact faculty who are working in the area in which you wish to pursue your thesis research individually for guidance. It is a good idea to make an appointment and be prepared to discuss your ideas. This direct interaction with faculty is one of the best ways to learn about opportunities for selecting a faculty advisor.

How long do I have to complete the graduate screening exam process?

Once you have signed up for the screening exam, you must complete the process within three semesters. For example, signing up in Fall 2003 means that you need to complete the process by the end of the Fall 2004 term. Exceptions to this rule are made only at the discretion of the Graduate Matriculation Committee.

What If I Wish to Transfer a Course That I Have Taken Outside of the Department?

If you have taken courses outside of this department that you would like to transfer into this department for credit, then the normal procedure for obtaining credit for transfer courses applies. However, academic credit for these courses does not necessarily mean that you will be given subject credit for these courses in the screening procedure. If you wish to obtain screening credit for a transfer course then you must pass the final exam of the relevant course in this department with a grade of B or better. Your grade for purposes of calculating your screening GPA is the grade you received on the final. If you take a final exam and do not pass you will not be penalized for this. However, you must then complete four courses from the list for which you have not been given subject credit.

How many students will pass the graduate screening exam?

There is no quota system. Any students who meet the criteria for passing, including a favorable evaluation by the screening committee will be passed. The number of students who continue to progress toward their ultimate doctoral degree goals is dependent on the available research opportunities.

What happens once I pass the graduate screening exam?

You will receive an official letter within two months of the completion of your screening exam. Your advisor will also be notified of your completion. You will also be directed as to the time to contact the department for discussion of the next steps of your program. This discussion includes your timeline for taking your Ph.D. qualifying exam and your proposed program of study.

What happens if I *conditionally pass* the graduate screening exam?

You will receive an official letter within two months of the completion of your screening exam. Your advisor will also be notified of your status. Your notification letter will describe the terms of your conditional pass and identify a deadline for the resolution of your conditional pass. If you meet the required deadline, your status will once again be reviewed. If you do not meet the required deadline, the department cannot guarantee that you will be evaluated and you may receive an automatic fail. Be sure to meet the deadlines!

What happens if I *do not pass* the graduate screening exam?

You will receive an official letter within two months of the completion of your screening exam. Your advisor will also be notified of your completion. If you do not pass the screening exam you will be directed to meet with the student services advisor regarding your terminal Master's degree.

Who are my resources if I have more questions about the graduate screening exam?

You have several resources along the way- you can contact a member of the Graduate Matriculation Committee, the student services advisor, your faculty advisor, or another faculty member for further advice or information. There is a listing of office hours for faculty members in PHE on the 6th Floor, next to the Student Services Advisor's office in Room 606.

Section Two

Explanation of Core Courses and Seminar Requirement

This section describes the requirements for core courses and EE-EP seminar attendance.

What are the core courses?

Four core courses are required. Two courses must be from the three major areas (IC/VLSI, Optics/QE, and EM/plasmas/Power/MEMS). The third course must be giving depth in the chosen area of specialization. A fourth course should further represent either depth or generalization.

Pick two out of three:

Courses from the three major areas are I) EE 536 Integrated Circuit Analysis and Design, II) EE 539 Engineering Quantum Mechanics, and III) EE 570a Advanced Electromagnetic Theory.

Pick one, depending on area:

Power:	EE 510 Symmetrical Components
Optics:	EE 529 Optics
Integrated Circuits:	EE 533a Mixed-Signal VLSI Systems Design
QE:	EE 540 Introduction to Quantum Electronics
Electromagnetics:	EE 570b Advanced Electromagnetic Theory
Plasma:	EE 572a Plasma Dynamics
VLSI:	EE 597 Microsystems Technology for Multimedia
MEMS	EE 607 Microelectromechanical Systems

Pick a fourth course:

From any of the previously listed courses or...
EE/MASC 501 Solid State Physics
EE 521 Power Systems
EE 557 Computer Systems Architecture
EE 562a Random Processes in Engineering
EE 567 Communication Systems
EE 572b Plasma Dynamics
EE 577a VLSI System Design

Choosing the Appropriate Courses

It is very important that you maintain a GPA of at least 3.5 in these courses. It is therefore important to be sure that you have adequate preparation before signing up for a course. You will have only one chance to take any particular course in the list above. In order to help you make the decision of whether or not to start with a screening course or

one of its prerequisites, you will find description of these courses on the following pages. This description for each course describes the background assumed of students in the course. In addition, it is important to attend the advisement meeting upon your entry into the screening procedure.

What is the seminar requirement?

To bring current events to the attention of students, two semesters of EE/EP seminars are expected. All students who are signed up for the graduate screening process will receive notice from the department of seminars. Additionally, advertisements are posted around the Engineering Quad and in PHE.

Section Three

Current Faculty in Electrical Engineering-Electrophysics And Their Areas of Interest

Below is a listing of current tenure track or tenured faculty and their areas of interest. For further information regarding their research, review the department research booklet, visit our website at www.usc.edu/dept/ee, or arrange to meet with a faculty advisor. Office hours are listed on PHE 6th floor bulletin boards.

Faculty Member	Research Area
T.C. Cheng	Power
John Choma, Jr.	Integrated Circuits-
P. Daniel Dapkus	Quantum Electronics
Martin Gundersen	Quantum Electronics
Robert Hellwarth	Quantum Electronics, Lasers
Hossein Hashemi	Integrated Circuits
Thomas Katsouleas	Plasma physics, advanced acceleration, light sources
Eun Sok Kim	MEMS
Hans H. Kuehl	Plasmas and electromagnetics
Anthony Levi	Quantum Electronics
John O'Brien	Photonics
Aluizio Prata, Jr.	Applied Electromagnetics
William Steier	Laser, Optical Devices
Armand Tanguay	Solid State, electronic devices
Chongwu Zhou	Molecular and nanoelectronics