



I. INTRODUCTION

The requirements for the Ph.D. degree in the School of Electrical and Computer Engineering (ECE) at Purdue University are set forth in this handbook. As a Ph.D. student at Purdue, you create your own plan of study, a document that defines the academic program leading to your degree. The guidelines in this handbook will help you to create your plan of study, register for classes, and schedule your examinations.

The degree requirements in this handbook are written so as to afford you the flexibility to develop a plan that best suits your needs and goals. You should consult with your advisory committee while developing your plan of study. The plan requires the approval of all advisory committee members as well as the approval of the ECE Graduate Coordinator and Graduate School.

In addition to this handbook, there are several other resources available to you for academic guidance. We invite you to visit the ECE Graduate Office, located in Room 135 of the EE Building, with questions about registration, plans of study, or any other academic issue. Many announcements are also posted on the bulletin board outside the ECE Graduate Office. In addition, you can access the **ECE Graduate Program website**:

<http://www.purdue.edu/ECE/Graduates>

NEW STUDENT INFORMATION

One of the first questions to be addressed is how to register for classes in your first semester. You may begin this process, as outlined in the following, as soon as you have received the formal offer of admission from the Purdue Graduate School. Registration for all subsequent semesters is covered in Section X, “*Registration.*”

1. The following documents are available to help orient you to Purdue University and to the ECE School:
 - The “**Graduate School Bulletin**” includes general information about the graduate school and lists all graduate courses with a brief description. Consult the **Graduate School website**:

<http://www.purdue.edu/GradSchool/>

Click on the link “*Publications, Forms, and Reports.*”

- The “**Advanced Planning List**” shows the planned ECE course offerings for each of the next several semesters.
- The “**Graduate Areas and Faculty Interests Supplement**” gives a list of faculty members in each of the eight ECE graduate areas. It also gives a brief statement of the specific interest area for each faculty member.

Be sure you have these documents. If you do not, you can visit the ECE Graduate Office website listed above or obtain copies from the ECE Graduate Office, EE Building, Room 135. A listing of ECE graduate courses with detailed course descriptions is also available on the ECE Graduate Program website and in the ECE Graduate Office.

2. Study these documents, and then consult with at least **three** different ECE faculty members, representing at least **two** of the eight ECE graduate areas. The purpose of this consultation is to begin planning your graduate program and deciding in particular which courses you should take in your first semester. Continuing Ph.D. students who have completed their Master's degree in the School of Electrical and Computer Engineering at Purdue and advanced directly to the Ph.D. program have already fulfilled this requirement, and are not required to fulfill it again.

You will find the specific areas of interest for the individual faculty members and their office location listed alphabetically in the "*Graduate Areas and Faculty Interests Supplement.*"

3. After consulting with faculty, prepare a tentative list of classes for the first semester, and report to the ECE Graduate Office, Room EE 135. Check the official Schedule of Classes for that semester to be sure that your selected courses are being offered and that their meeting times do not conflict.
4. Note that your graduation requirements include the satisfactory completion of one semester of EE 694A, the Electrical and Computer Engineering Graduate Seminar, and demonstration of proficiency in written English. Refer to Section IX, "*Other Important Departmental Requirements,*" for more detail. We strongly suggest that you complete these during your first or second semester.
5. The ECE Graduate Office staff will enter your registration into the Registrar's computer system. You will receive a fee statement from the Bursar by mail if there is sufficient time before the beginning of the semester. Otherwise you should acquire it from the Bursar's Office, Hovde Hall. **Payment of this fee statement completes the registration process.** Your registration will be cancelled if payment is not made by the deadline determined by the Registrar's office. This deadline is posted in several locations, including the bulletin board outside the ECE Graduate Office.

II. Ph.D. DEGREE REQUIREMENTS

In this section, we present a brief summary of the requirements and milestones expected of each student in the ECE Ph.D. program. More complete descriptions are provided in the subsequent sections of this handbook.

Students can be admitted to the doctoral program 1) after having already completed a Master's degree, or 2) directly after their undergraduate program. In this handbook, we will refer to those students entering the program without a Master's degree as "*direct Ph.D. students,*" and their degree program as the "*direct Ph.D. program.*"

The Graduate School requires that doctoral students register for a minimum of 90 hours (course hours plus EE 699 research hours) beyond the Bachelor's degree (typically 60 hours beyond the Master's degree). A typical doctoral program requires a minimum of

42 hours of course work beyond a Bachelor's degree, or 21 hours beyond the Master's degree, not including EE 699 (thesis research).

There are three major examinations you must pass during the course of your Ph.D. program. These are the Qualifying Examination (QE), the Preliminary Examination, and the Final Examination. Be sure to consult Section III, "*Time Schedule for Doctoral Program*" for important scheduling information for these examinations and other program benchmarks. These are also summarized in Appendix A:

The **Qualifying Examination (QE)** is a written examination that covers core courses, the Primary Area, and ECE Related Areas. The **Preliminary Examination** includes an oral presentation and a written thesis proposal. The purpose of the Preliminary Examination is to determine if you are adequately prepared to conceive and undertake a suitable research topic. Doctoral research must be original and merit publication in the scholarly literature. The oral **Final Examination** is given to determine if your thesis research warrants granting the Ph.D. degree.

III. TIME SCHEDULE FOR DOCTORAL PROGRAM

The following schedule sets forth the maximum times to be permitted in various phases of the doctoral program. **It should be emphasized that these are maximum times, and that the average doctoral student is expected to complete the various steps in a substantially shorter time.** In the time schedule, only full semesters are considered; summer sessions are not counted regardless of whether or not the student is registered. Deadlines shown in parentheses apply to direct Ph.D. students.

1. **File Preliminary Plan of Study**—Before registering for your second semester you must file a preliminary plan of study. Three faculty members who have advised you on your choice of courses (the *Academic Advisory Committee*) must sign the preliminary plan of study. Failure to meet this deadline may result in a delay to your registration and/or suspension of your ECN account. Refer to Section V, "*Doctoral Plan of Study.*"
2. **Begin Research**—Starting with the third (fifth for direct Ph.D. students) semester, you must register for EE 699 (Ph.D. thesis research), under the supervision of your Major Professor. Students having difficulty identifying a project should consult with the ECE Graduate Coordinator.
3. **File Final Plan of Study**—Before registering for the fourth (sixth for direct Ph.D. students) semester, you must file a final plan of study. At this time, you must have a Major Professor and a Doctoral Advisory Committee. Failure to meet this deadline may result in a delay to your registration and/or suspension of your ECN account. Refer to Section VI, "*Doctoral Plan of Study.*"
4. **Take Qualifying Examination (QE)**—You must attempt the Qualifying Examination (QE) before the start of the fourth (sixth for direct Ph.D. students) semester. Students should file an application for the exam with the ECE Graduate Office prior to the end of the fifth week of the semester preceding the date the exam is to be taken. Failure to take the QE by this deadline results in automatic failure of that attempt of the QE. Refer to Section XIII, "*Qualifying Examination.*"

5. **Satisfy Written English Proficiency Requirement**—You must satisfy this requirement within the first four semesters of your doctoral program. However, you may have already satisfied this requirement. Refer to Section IX, “*Other Important Departmental Requirements.*”
6. **Take Preliminary Examination**—You must take the Preliminary Examination before the end of the sixth (eighth for direct Ph.D. students) semester. You cannot schedule the Preliminary Exam until after you have passed the Qualifying Examination and the Graduate School has approved your final plan of study. Refer to Section XIV, “*Preliminary Examination.*”
7. **Take Final Examination**—You must take your Final Examination (also known as your thesis defense) within five calendar years of passing your Preliminary Examination, or before the end of your eighth (ninth for direct Ph.D. students) year, whichever comes first. You must be registered for at least two sessions (academic year or summer) between the Preliminary Examination and the Final Examination. Refer to Section XVI, “*Final Examination,*” for more details.

IV. ACADEMIC ADVISORY COMMITTEE

The purpose of your Academic Advisory Committee is to provide early advice on your choice of courses on the preliminary plan of study. Your Academic Advisory Committee consists of the three West Lafayette campus Electrical and Computer Engineering faculty members who sign your preliminary plan of study. On the preliminary plan of study, a Major Professor need not be indicated. The Academic Advisory Committee serves until you have selected a Major Professor and Doctoral Advisory Committee. The two advisory committees need not be the same.

V. DOCTORAL ADVISORY COMMITTEE

Your Doctoral Advisory Committee consists of at least four members. The primary duties of this committee are to assist in preparation of your final plan of study, to advise you during the course of your thesis research, and to conduct your Preliminary and Final Examinations.

Your Major Professor serves as chair of your Doctoral Advisory Committee. The selection of your Major Professor requires his/her consent and the approval of the ECE Graduate Coordinator. Your research interests, either in a general topic or a specific project, will guide your choice of Major Professor. As you begin work on a research project, your professor will often be able to support you as a Research Assistant. If not, your professor is often able to offer a Research Assistantship at some later date. If you are supported on a Teaching Assistantship or a Fellowship, you will find you have a bit more flexibility in choosing a project that interests you the most. In the event that you want to replace your Major Professor, please visit the ECE Graduate Coordinator to discuss this.

In most cases, the Major Professor and the student shall agree upon the related areas, and on the members who will serve with the Major Professor on the Doctoral Advisory Committee. The following requirements will guide you in the selection of your committee members.

1. The Chairperson and at least one other member must be West Lafayette ECE faculty members and should be a member of the primary area that you have declared.
2. If two advisors guide your research jointly, it may be advisable to have two co-chairs on your advisory committee rather than a single chair. At least one of these co-chairs must be a member of the West Lafayette ECE faculty and should be a member of the primary area that you have declared.
3. A majority of your advisory committee must be composed of West Lafayette campus faculty members.
4. At least one member must not be a faculty member in Electrical and Computer Engineering at Purdue University or elsewhere.
5. A special member, defined as a person without regular certification, may serve on your Doctoral Advisory Committee. (Most faculty members at Purdue, including regional campuses, have regular certification.) Special members of the advisory committee are typically researchers from industry, non-faculty research staff from Purdue, or faculty members from other universities. You may initiate a request for special certification in the ECE Graduate Office. We will need a current, complete vita for the special member at the time of your request.

ECE faculty members with regular certification are listed in the electronic plan of study program as well as in the back of this handbook (see Appendix B). The Doctoral Advisory Committee is established when the final plan of study is filed and approved (see Section VI, "*Doctoral Plan of Study*"). Changes to the Doctoral Advisory Committee require a "*Request for Change to the Plan of Study*" form (Form GS-13) to be completed if you originally submitted a paper Plan of Study, or by submitting an electronic request to change your Plan of Study if your plan is in the electronic format. The Doctoral Advisory Committee, as agreed upon by the Major Professor and the student, shall be presented to the ECE Graduate Coordinator and the Dean of the Graduate School for their approval and formal appointment. The Dean may appoint additional members if it seems advisable.

VI. DOCTORAL PLAN OF STUDY

As a Ph.D. student, you must file a **preliminary plan of study** during your first semester in the program. Your plan of study defines the coursework requirements for your graduate degree. The plan must be appropriate to meet the needs of your chosen field as determined by your Academic Advisory Committee and approved by the ECE Graduate Coordinator. It is important to establish this plan early in your academic program, as early planning helps ensure a logical curriculum, sets a clear pathway toward completion of your coursework requirements for your degree, and helps the school plan and monitor the ECE graduate program. Therefore, failure to file your plan of study in your first semester may result in a delay to your future course registration and/or suspension of your ECN account. This preliminary plan of study, which you complete and submit in paper format, is for internal use only, and will not be forwarded to the Graduate School.

You must file your **final plan of study** before registering for the fourth semester of your doctoral program (sixth semester for direct Ph.D. students). This plan of study, which you file electronically, requires the approval of the Doctoral Advisory Committee, the ECE Graduate Coordinator, and the Dean of the Graduate School. Failure to file your final plan of study in your fourth (sixth) semester may result in a delay to your future course registration and/or suspension of your ECN account.

PHD COURSEWORK REQUIREMENTS

Each student's plan of study must include coursework in the student's Primary Area of study, an ECE Related Area, and Mathematics. The eight possible areas for ECE Primary or ECE Related Areas, and the core course associated with each, are as follows:

| ECE Research Areas | Core Course |
|---|--------------------|
| Automatic Control (AC) | EE602 |
| Biomedical Engineering (BE) | EE600 |
| Communications and Signal Processing (CS) | EE600 |
| Computer Engineering (CE) | EE608 |
| Energy Sources and Systems (ES) | EE610 |
| Fields and Optics (FO) | EE604 |
| Solid State Devices and Materials (SS) | EE606 |
| VLSI and Circuit Design (VC) | EE606/608 |

Each of these ECE Research Areas is governed by an Area Committee, consisting of the ECE faculty with research and/or teaching interests in that discipline. These Area Committees establish policy for students who declare the area as their Primary Area, recommend approval of new courses and course revisions for the area, and consider requests for deviations from area policies.

When preparing your preliminary plan of study, you must **include all graduate courses taken** or expected to be taken in preparation for the Ph.D. degree, including those taken as a part of a Master's Degree, regardless of where taken. This allows your advisory committee to evaluate your overall plan, and helps avoid repeating courses with similar content. If you need to change your curriculum or advisory committee after you have submitted your plan of study, this is easily done. See Section XII, "*Changes in Academic Plan.*"

The following requirements must be satisfied on all plans:

1. A minimum of 21 hours of course work beyond the Master's degree, or 42 hours beyond the Bachelor's degree for direct Ph.D. students. **Please Note:** EE 696 "*Advanced Electrical Engineering Projects*" and EE 697 "*Directed Reading in Electrical Engineering,*" usually cannot be used to satisfy these requirements. (See Subsection B, "*ECE Related Areas*" for possible exceptions to the EE 696 and 697 prohibition.)
2. At least 12 hours of courses from the ECE Related Area. Six of these hours may be from your Master's program. See Subsection B "*ECE Related Areas.*"

3. At least 9 hours of mathematics course work. Three of these hours may be from your Master's program. See Section VII, "*Mathematics Requirement*" for a list of acceptable Math courses.

The core courses cover the background material in the various ECE areas, and you will likely need to take several of these in order to prepare for higher level courses, to prepare for the Qualifying Examination, and to provide breadth to your curriculum. The ECE School does not specify how many core courses you must take.

In addition to the requirements discussed above, some students choose an "*Area of Specialization.*" Areas of specialization available to ECE Ph.D. students are Computational Science and Engineering and Biomedical Engineering. The area of specialization will appear on the transcripts issued after the degree is posted. The area of specialization does not appear on the diploma. Fulfillment of the requirements for an area of specialization usually involves some additional coursework, or places additional restrictions on your selection of courses. You can find an application in the ECE Graduate Office.

The rules regarding Primary Area, ECE Related Area, and Mathematics course work requirements are set forth below. Deviations from these rules require the approval of the current (Academic or Doctoral) Advisory Committee, the Area Committee for the student's Primary Area, and the ECE Graduate Coordinator. Area Committee approval obtained for an exception on a preliminary plan of study will automatically serve as Area Committee approval for the final plan of study as long as the student has not changed areas.

A. PRIMARY AREA

Courses listed in the Primary Area include those beyond the Bachelor's degree administered by the ECE Area in which you will do your doctoral thesis research. Courses administered by an ECE Area other than the designated Primary Area, by the ECE Graduate Committee, or by an Outside Area and having particular relevance to the Primary Area, may also be listed under the Primary Area. Each Area Committee in ECE shall designate those courses in ECE that are acceptable in the Primary Area listings of its own students. Such listings are available in the ECE Graduate Office for many of the areas on your Plan of Study. The ECE School does not specify how many Primary Area courses you must have. Your advisory committee (refer to Section IV, "*Academic Advisory Committee*" and Section V, "*Doctoral Advisory Committee*") will help you determine the right combination for you.

B. ECE RELATED AREA

Your ECE Related Area coursework is a set of at least four courses (12 credit hours) beyond the Bachelor's degree covering topics outside your Primary Area. Two of these courses may be from your Master's program. If approved by your advisory committee, and if consistent with ECE Primary-Area policies, all non-ECE courses and ECE courses associated with a different ECE area (including courses administered by more than one area) may serve as ECE Related Area courses. ECE Related Area courses are intended to add breadth to your program, and may be, but are not required to be, from the same ECE area. Also, each Area Committee shall indicate if EE 696 projects or EE 697 courses taken outside the Primary Area may be included as part of an ECE Related Area for its own students. If the area does allow this, then Area approval is required for each individual case.

C. MATHEMATICS REQUIREMENT

All ECE Ph.D. students must take at least three graduate level mathematics courses (9 credit hours). One of these courses may be from your Master's program. See Section VII, *"Mathematics Requirements,"* for a listing of acceptable Mathematics courses, including a select set of Computer Science, Statistics, and Physics courses that can also help satisfy this requirement. The Mathematics Requirement may be waived for students who have an exceptionally strong, documented background in Mathematics, as for example, some students who have previously earned a Master's degree in this discipline. Please see the ECE Graduate Coordinator if you have questions.

SUBMISSION OF Ph.D. PLAN OF STUDY

This section provides specific information for preparing the Doctoral plan of study form. You will file your preliminary plan of study using the *"Electrical and Computer Engineering Preliminary Plan of Study"* (lilac) form, which you can find in the Rack outside EE 135. Alternately, you may use the final plan of study form entitled, *"Request for Ph.D. Degree Advisory Committee and Plan of Study Approval, GS-4."* You can find this form in MS Word format on the Graduate School website:

<http://www.purdue.edu/GradSchool/>

Click on *"Forms and Reports."* You will get a list of forms available online, including the Ph.D. plan of study. Click on this form. You must file your preliminary plan of study prior to registration for the second semester of your program.

You will file your final plan of study electronically, using a program recently introduced by the Graduate School. Instructions for accessing the electronic plan of study program are available at

<http://ECE.www.ecn.purdue.edu/ECE/Graduates>

Instructions are also available and in hard copy form at the ECE Graduate Office. You must submit your final plan of study before registering for your fourth semester (sixth semester for direct Ph.D. students).

Following are instructions for submitting your preliminary or final plan of study:

- 1. Review the preceding portions of this Doctoral Program handbook** to determine the Ph.D. coursework requirements.
- 2. Review the list of 500- and 600-level courses** to determine the courses of most interest to you that will enable you to meet your degree requirements. The list of 500- and 600- level courses is available in the ECE Graduate Office and on the web.
- 3. Review the Advanced Planning List** to verify that the necessary courses will be offered at a time when you wish to take them. The Advanced Planning List is available in the ECE Graduate Office and on the web.

4. **Fill out a pencil draft** (Preliminary plan) or an electronic draft (Final Plan) of your plan to ensure that you have all the needed information. Attention to the details in the preceding subsections “*Ph.D. Coursework Requirements*” and “*Helpful Hints for Filling Out the Ph.D. Plan of Study*” will help to ensure that you have, indeed, included courses that satisfy all requirements.
5. **Secure the agreement of an ECE faculty member to serve as the chair of your Academic Advisory Committee (preliminary) or Doctoral Advisory Committee (final).** Confer with him/her to obtain advice on your course selection and the make-up of your advisory committee, and ultimately his/her informal agreement to the plan of study.
6. **Secure the agreement of two (preliminary plan) or three (final plan) additional faculty members** to serve on your graduate advisory committee and their informal approval of the plan (no signature is required on the pencil draft). The choice of these two faculty members to serve on your graduate advisory committee must be approved by your chair. See Section IV, “*Academic Advisory Committee,*” and Section V, “*Doctoral Advisory Committee,*” for more information on your Advisory Committees.
7. **Return to the Ph.D. Plan of Study form, and enter all required information.** The Preliminary Plan of Study may be filled out by hand (neatly). If not already using the lilac ECE Preliminary Plan of Study form, please ask the Graduate Office staff to photocopy your completed form on lilac paper before collecting signatures from your Academic Advisory Committee. Sign your plan, and carry it to the members of your advisory committee for their signatures. After your plan of study **has been signed** please make a copy for your records and submit the original to the ECE Graduate Office.

When submitting your Final Plan of Study, you will update your electronic draft by entering all changes that result from your discussions with your advisory committee, and submit it as your final plan electronically. After you submit it, it will automatically be routed in sequence to the ECE Graduate Office for initial screening, and to your advisory committee, to the ECE Graduate Coordinator and to the Graduate School for their approvals. If your plan fails to gain the approval at any of these levels, the reason for the rejection will be explained by e-mail so that you can make any required changes and resubmit it for approval. Your revised plan then goes through the same approval process as explained above.

You may check the status of the approval process at any stage. You will be sent an e-mail message approval has been obtained from the Graduate School. These approvals usually take several weeks.



HELPFUL HINTS FOR FILLING OUT THE Ph.D. PLAN OF STUDY

Following are some useful hints to clarify the information required to fill out the plan of study form. An example of a Preliminary Ph.D. plan of study form is provided in Appendix C at the back of this handbook .

1. In the space at the top marked Dept. Code enter E25. (Preliminary Plan only.)

2. The space for indicating the Research Area may be filled in with a word or words descriptive of the thesis topic, e.g. Design of Robot Controllers. (This is optional, and you may choose to leave it blank).
3. Indicate the Primary Area for your plan of study on the first entry under courses, as shown in the sample plan of study in. (Preliminary Plan only.) The primary area **must** be one of the eight areas of the ECE graduate program.
4. Indicate courses in your Primary Area with a “P” in the left-most column labeled “Area.” (Preliminary Plan only.)
5. Indicate courses in your ECE Related Area and courses that satisfy your mathematics requirement with an “R” in the “Area” column. (Preliminary Plan only.)
6. Indicate each of the courses on your plan of study as Primary Area or Related Area courses. (Final Plan of Study only.) The primary area **must** be one of the eight areas of the ECE graduate program. Courses jointly listed by two areas and non-ECE courses can be listed as Related Area Courses.
7. The space for indicating the “Area of Specialization” is reserved for programs such as Computational Science and Engineering (AOS code 061) or Biomedical Engineering (AOS code 402). If you have not applied and been admitted to one of these programs, please leave this blank.
8. Special topics courses such as EE 640 W,Y,Z and EE 650 W,Y,Z must be listed as three separate courses with three separate titles.
9. Be sure that course titles on the plan of study match those on your transcripts, especially on experimental courses (EE 595 or EE 695).
10. **Do not mark that a “B” or better is required for any courses on your plan.** This is not a requirement for you for any courses.
11. Up to nine credit hours on your plan of study may be taken at one of the regional campuses of Purdue University or transferred from another university, subject to the approval your advisory committee and the ECE Graduate Coordinator. Courses transferred from other schools should be listed on the plan of study with the same title and number as on the transcript from the school at which they were taken. **Do not use the equivalent number from a Purdue course.** One copy of the catalog description of all courses transferred should be supplied to the ECE Graduate Office for each such course. For more information about transfer courses, refer to Section VIII, “Transfer and Excess Undergraduate Credits.”
12. If you took a graduate level course while you were in the final year of your undergraduate program, you may be able to apply it toward your Graduate degree in ECE. You must have earned a “B” or better in the course, and it must not have been used to satisfy any requirements for another degree. Indicate this course as “undergraduate excess” in the column “other or

transfer from.” For more information about undergraduate excess courses, refer to Section VIII, “*Transfer and Excess Undergraduate Credits.*”

13. The column on the Preliminary Plan of Study labeled “*Regular Regis.*” is used to indicate whether a course was (or is to be) taken at Purdue (“*RR*”) or transferred from another school (“*TR*”). On the Final Plan of Study, you will use a drop-down box to indicate, for each course, the registration type (regular, transfer, non-degree registration, or undergraduate excess.) Transfer, non-degree, and undergraduate excess registration are described in bullet items above.
14. Pass/No pass grades are not permitted for courses on the plan of study.
15. Courses that are offered by more than one department must appear with the number and title under which they were taken.
16. Thesis research, EE 699, and the ECE seminar, EE 694, should not be included on the plan of study.
17. Courses used to fulfill the departmental English requirement should not be included on the plan of study.
18. Language Requirement--Section # 7 on the Preliminary Plan specific query on the Final Plan. Do not enter anything in this area.
19. Graduate Faculty Identifiers--Section # 9 on the Preliminary Plan Graduate Faculty Identifier numbers are located at the back of this handbook and are listed explicitly in the Plan of Study program for the Final Plan.
20. Department Code for members of your Advisory Committee--Section # 10 on the Preliminary Plan; ECE for ECE faculty, otherwise identify their department; Code: E25 for ECE faculty. (P67 for Physics, P65 for Math, and P57 for CS). These codes are explicitly included in the Plan of Study program for the Final Plan.
21. Research Area of Advisors--Section # 11 on the Preliminary Plan or specific query on the Final Plan (“Advisor in Area Of”). ECE requires that you fill this in and abbreviate (e.g. AC, CE, VLSI, etc.) Ignore the statement on the Plan of Study Program that this entry is optional. You will find a listing of the ECE faculty, including the primary research area or areas for each, at the ECE Graduate Program web page

<http://www.purdue.edu/ECE/Graduates>

VII. MATHEMATICS REQUIREMENT

The School of Electrical and Computer Engineering requires that all Ph.D. students include nine hours of mathematics as a related area on their plans of study. Three of these hours may be from the student's Master's program. The following requirements apply:

Mathematics courses numbered MA 511 and above are acceptable with the exceptions listed below:

1. Stat 519 (MA 519) is **not** acceptable.
2. Automatic Control and Communications & Signal Processing accept MA 504.
3. Biomedical Engineering and Energy Sources and Systems accept MA 510.
4. Communications and Signal Processing does not allow Math 527.
5. Math Teacher related courses are not acceptable.

Additional graduate-level courses that can be used to satisfy the mathematics requirement:

Computer Science Courses:

| | |
|--------|---|
| CS 514 | Numerical Analysis |
| CS 515 | Numerical Analysis of Linear Systems |
| CS 520 | Computational Methods in Analysis |
| CS 614 | Numerical Solution of Ordinary Differential Equations |
| CS 615 | Numerical Solution of Partial Differential Equations |

Statistics Courses:

| | |
|-------------------|--|
| Stat 528 | Introduction to Mathematical Statistics |
| Stat 529 | Applied Decision Theory and Bayesian Statistics |
| Stat 532 (MA 532) | Elements of Stochastic Processes |
| Stat 538 (MA 538) | Probability Theory I |
| Stat 539 (MA 539) | Probability Theory II |
| Stat 553 | Theory of Linear Models and Experimental Designs |
| Stat 554 | Multivariate Test Statistics |
| Stat 555 | Non-Parametric Statistics |
| Stat 576 | Introduction to Statistical Decision Theory |
| Stat 638 (MA 638) | Stochastic Processes I |
| Stat 639 (MA 639) | Stochastic Processes II |
| Stat 657 | Theory of Tests, Estimation and Decisions I |
| Stat 658 | Theory of Tests, Estimation and Decisions II |
| Stat 667 | Measure-Theoretic Statistics: Decision Theoretic and Classical |
| Stat 668 | Asymptotic Distribution Theory |

Physics Courses:

| | |
|-------------|-----------------------------------|
| Physics 600 | Methods of Theoretical Physics I |
| Physics 601 | Methods of Theoretical Physics II |

Please Note: Faculty-initiated requests for changes or exceptions to the above will be considered by the Graduate Committee after approval by the appropriate area. Student-initiated requests must follow the same procedure, with the additional first step of approval by your Major Professor.

VIII. TRANSFER AND EXCESS UNDERGRADUATE CREDITS

Graduate level credits earned at regional campuses of Purdue University or at another reputable university may be used toward a graduate degree in ECE, subject to the approval of the student's current Advisory Committee, the ECE Graduate Coordinator, and the Graduate School. A total of nine credit hours may be applied toward the Doctoral degree. All courses transferred must be acceptable for graduate credit at the school at which they were taken, must not have been used to meet the requirements for another degree, and must have been completed with a grade of "B" or better. While credit for transferred courses appears on your Purdue transcripts, grades for transferred courses are not used in computing the Purdue grade-point average.

Without exception, all regional campus credits, transfer credits, and excess undergraduate credits used on graduate plans of study must be approved by your advisory committee and by the ECE Graduate Coordinator. A special request for approval is not necessary; simply include such courses on the plan of study. Show a copy of the catalog description and syllabus of the course to your advisory committee, and deliver it to the ECE Graduate Office. Please also bring a transcript showing the credit and grade received to the ECE Graduate Office, if we do not already have one. A statement from an official at the university from which you are transferring the course certifying that the course was not used to fulfill requirements for any other degree may also be required. Refer to Section VI, "*Doctoral Plan of Study*" for additional instructions.

IX. OTHER IMPORTANT DEPARTMENTAL REQUIREMENTS

ENGLISH REQUIREMENT

All ECE graduate students must demonstrate acceptable proficiency in written English before graduating. Doctoral students must satisfy this requirement within the first four semesters of their doctoral program. We **strongly** recommend that students fulfill the English requirement as early as possible (first semester) in their academic program. Any **one** of the following methods may be used to fulfill the English requirement.

A. For Non-Native Speakers of English

- Score a five or higher on TWE (Test of Written English).
- Pass English 002, offered at Purdue University, with a grade of Satisfactory (S).
- Provide evidence (transcripts, for example) that you have successfully completed a one-semester-long composition course equivalent to English 002 or English 101 from an English-medium university with a grade of B or better. The ECE Graduate Coordinator may require you to provide a course description or additional information for this course.

B. For Native Speakers of English

- Score a five or higher on the GRE Writing Assessment.

- Pass English 101, offered at Purdue University, with a grade of B or better.
- Provide evidence (transcripts, for example) that you have successfully completed a one-semester-long composition course equivalent to English 101 from an English-medium university with a grade of B or better. The ECE Graduate Coordinator may require you to provide a course description or additional information for this course.

EE 694A SEMINAR REQUIREMENT

The School of Electrical and Computer Engineering requires that all graduate students satisfactorily complete one semester of EE 694A Electrical and Computer Engineering Graduate Seminar. This course carries no credit but a grade of Satisfactory or Unsatisfactory is given. Students who have received a Master's degree from the School of Electrical and Computer Engineering at Purdue have already fulfilled this requirement. This course should not be listed on the plan of study. We strongly recommend that you take EE 694A during your first or second semester.

X. REGISTRATION

REGISTRATION GUIDELINES¹

The registration period begins around October 15 for the Spring semester and around March 15 for the Summer Session and Fall Semester, and continues until the second Monday of classes (the first Wednesday in the summer session). Look for specific announcements as these dates approach. All current ECE graduate students must register and pay their fees during this registration period. Note that late registration incurs a substantial penalty fee. We encourage your early course selection and registration, as school decisions to cancel low-enrollment courses may affect your course options. If this is your final semester, check the *candidate* box marked “yes” (#6 on the registration form). If you are not certain that you will finish your degree requirements, we still advise you to check the *candidate* box. If you are not on the candidates list, you will not graduate even if you have completed the final requirements. **After you have registered, check SSINFO to verify that your registration is correct. Report any errors to the ECE Graduate Office.**

To drop or add a course, come to the ECE Graduate Office. **Be sure to confirm that a dropped or added course has been officially recorded by checking SSINFO.** Early registration will be processed directly by the ECE Graduate Office staff. Any change after the 4th week of classes requires the signature of the ECE Graduate Coordinator, and you must take the registration form to the Registrar's office (Hovde Hall, Room 45) for processing.

Check with the ECE Graduate Office when registering for “*Exam Only*” or “*Degree Only*” to make certain that you qualify and have met all necessary requirements. You must have been registered for at least one credit hour of research in the previous semester. **The deadline for “*Exam Only*” or “*Degree Only*” registration is one week before classes begin.**

¹ How to register for your first semester is covered in Section I above.

A. Dropping Courses

Courses dropped during the first two weeks of classes will not appear on your permanent record. Courses dropped during weeks 3 and 4 will be recorded as a “W” grade on your permanent record. Courses dropped during weeks 5 through 9 require the signature of the instructor and the ECE Graduate Coordinator. At this time, the instructor must assign a grade of “W,” “WF,” or “WN.” You must then take the completed registration form to the Registrar’s Office. The end of this period is the final deadline for withdrawing from a class. A “W” simply records the fact that the student withdrew after the second week of the semester. A “WF” records that the student was failing a graded course. Beginning with the summer 2002 session, “WF” grades are no longer included in computing the cumulative GPA. A “WN” records failing status in a course being taken Pass/No Pass. (Pass/No Pass grades are not permitted for courses on your plan of study.) “W,” “WF,” and “WN” grades are recorded on your permanent record.

B. Adding Courses

Courses added during the first week of the semester require the approval and signature from the ECE Graduate Office. Courses added during weeks 2 through 4 require the approval and signature of the instructor and the ECE Graduate Coordinator. Courses may be added during weeks 5 through 9, but only under extraordinary circumstances, and require the approval and signature of the instructor and the ECE Graduate Coordinator. For non-ECE courses, the head of the department where the course is offered is also required. You must then take the completed registration form to the Registrar’s office.

C. Summer Session

The calendar for dropping and adding courses during the summer session is accelerated due to its shorter duration. You can check these dates on the bulletin board outside the ECE Graduate Office so that you do not miss any important deadlines.

RESIDENCY AND LOAD

A. Semester Load

To qualify as a full-time student, you must satisfy one of the following criteria:

- Be registered for nine credit hours
- Hold a research or teaching assistantship (1/4 time or greater) and be registered for at least six credit hours

All international students must be full-time in order to maintain their visa status.

Any student holding a **teaching or research assistantship** is expected to register for at least six credit hours (3 hours in summer). ECE Teaching Assistants may register for a maximum of nine credit hours of coursework and/or thesis research.

No student may register for more than one Computer Science course per semester.

B. Resident Study Requirements

The total number of hours of academic credit used to satisfy the residency requirements of the Graduate School consists of all course credit hours that appear on the plan of study, other graduate course credit hours with grades of “C” or better that appear on the

Purdue transcript, and research hours with grades of “S” that appear on the Purdue transcript.

- At least 90 total credit hours are required.
- A Master’s degree from any accredited university is considered to contribute 30 credit hours toward satisfying this residency requirement.
- At least one-third of the total credit hours used to satisfy degree requirements must be earned, while registered for Ph.D. study, in continuous residence on the West Lafayette Purdue campus. Course credits obtained via televised instruction are considered to have been obtained in residence on the campus from which the course was broadcast.

In fulfilling these requirements, a maximum of 15 credit hours will be allowed from any one semester (8 hours from a summer session). In general, the ECE Graduate Office advises thesis students to register for the maximum allowable number of EE 699 credits each semester as a precaution against falling short of the requirement.

XI. MINIMUM ACADEMIC STANDARDS

As a Ph.D. student in ECE, you are expected, throughout your academic program, to achieve the following standards:

- 1) Maintain a cumulative grade point average of at least 3.30 out of 4.00 over the courses on your plan of study, with no grade less than “C,”
- 2) Earn grades of “Satisfactory” in thesis research credit hours,
- 3) Satisfactorily complete the EE 694 seminar and the written English proficiency requirement within the first two semesters of your academic program,
- 4) Make continuous and significant progress each semester toward completion of your degree requirements, and
- 5) Complete all degree requirements and graduate within the deadlines described in Section 0, “Final Examination.”

Each of these standards is related to the minimum requirements for graduation. You will be placed on academic probation if you complete any semester or summer session with a deficiency in any of these standards. Should you remain on academic probation at the end of the succeeding semester or summer session, you may not be permitted to register for further graduate study, at the discretion of the Graduate Coordinator. Students concerned about their academic progress should schedule an appointment with the ECE Graduate Coordinator.

The cumulative grade point average referred to above is calculated using the courses on the Ph.D. plan of study, excluding courses taken as part of the Master’s program. If a course is taken more than once while you are enrolled as a graduate student, only the most recent grade received in the course will be used in computing the grade point average. Transfer courses and graduate-level courses taken while an undergraduate student are not included in the computation of the cumulative grade point average. University requirements state that no grade of “D” or “F” is allowed in a course on the plan of study. Any plan of study course in which a grade of “D” or “F” is received must be repeated and completed successfully; it cannot be dropped from the plan of study.

XII. CHANGES IN ACADEMIC PROGRAM

It is recognized that as a student's program progresses there may arise conditions that make it desirable to change the plan of study, and indeed, such changes, when based upon sound academic reasons, are encouraged. However, some regulations have been found necessary in order to prevent this privilege from being abused. Specifically:

- A course may not be removed from a plan of study once it has been taken and a grade of "D" or lower received.
- The deadline for submitting a request to the ECE Graduate Office to delete a course in which you are currently enrolled from your plan of study is the end of the ninth week of the semester, or the end of four and one half weeks in the summer session.
- Any change to a plan of study requires approval of the student's advisory committee and the ECE Graduate Coordinator.

To change your preliminary Ph.D. plan of study, or to change your final Ph.D. plan of study if you submitted your original plan in paper format, you fill out a "Request for *Change to the Plan of Study*" form, which you will find at the **Graduate School website**:

<http://www.purdue.edu/GradSchool/>

Click on "*Forms and Reports.*" From the list of forms available online, click on the "*Change to Plan of Study*" form GS-13. The Change to the Plan of Study form is also used to request a change of Major Professor or other committee members. Complete the form, **including a valid academic reason for each change**, sign it, then have the Major Professor sign it. If you are adding or deleting committee members, they must also sign. Retain a copy of these forms for your file, and deliver the originals to the ECE Graduate Office.

You must submit an electronic request to change your final Ph.D. plan of study, if you submitted your original plan of study in electronic format. To do this, go to the Electronic Plan of Study program on SSINFO as described previously in Section VI, "Ph.D. Plan of Study."

In the case when the ECE requirements for the Ph.D. degree program change, there is no need for you to revise your previously approved plan of study to conform to the new rules. All approved plans of study remain valid. You have the option to request to change your plan of study to conform to the new rules, but are not required to do so.

XIII. QUALIFYING EXAMINATION

The Qualifying Examination (QE) is a written examination required of all ECE doctoral students, and must be attempted before the start of the fourth semester (sixth semester for direct Ph.D. students). The QE is offered twice each year, typically on the Thursday of the week preceding the start of classes in the Fall and Spring semesters. You must register for the exam before the end of the fifth week of the Fall or Spring semester

preceding the QE. This examination is a four-hour closed-book examination, consisting of questions from the material covered in each of the ECE core courses and questions from each of the eight ECE graduate Research Areas. Each area will usually prepare “Basic” and “Advanced” questions. You may select which questions to answer subject to the following restrictions. You must answer:

- a) At most four questions.
- b) A core course question from outside your Primary Area. (If your Primary Area is VLSI and Circuit Design (VC), you must declare EE 606 or EE 608 as your Primary Area course prior to the exam.)
- c) At least two questions from your Primary Area, one of which may be the Area core course question.
- d) At most one Advanced Question from your Primary Area.

A score of 280 out of 400 is required to pass the QE. Students who do not pass the QE must take the QE again on the following offering of the examination. Failure to take the QE by the deadline results in automatic failure of that attempt of the QE. The program of students who fail their second QE attempt will be terminated, unless they request and are granted permission to take the QE a third time. Under no condition may a student take the QE more than three times. The content and administration of the QE are described in more detail in the *“School of Electrical and Computer Engineering Rules and Procedures for the Ph.D. Qualifying Examination.”*

XIV. PRELIMINARY EXAMINATION

The Preliminary Examination is given to determine whether you are adequately prepared to conceive and undertake a suitable research topic. You may not schedule your Preliminary Examination until after you have passed the Qualifying Exam and submitted your final plan of study. The Preliminary Exam may include a written exam if the Doctoral Advisory Committee desires, but it must include an oral part and a written thesis proposal. You must complete your Preliminary Examination at least two academic sessions (summer or academic year) for which you are registered before taking the Final Examination. Since one goal of the Preliminary Examination is to allow your Doctoral Advisory Committee members the opportunity to provide you research direction and feedback, you should take it early enough to allow the Doctoral Advisory Committee to make an effective contribution. During the Preliminary Examination, you should exhibit:

- A clear understanding of the research problem.
- An awareness of pertinent background literature and current efforts in the research area of interest.
- Some initial progress toward solving the research problem.
- A plan to execute the entire thesis research.

The requirements, structure, and administration pertaining to the Preliminary Examination are described below.

1. No more than six semesters can elapse after entering the doctoral program before you take the Preliminary Examination (eight semesters for direct Ph.D. students). Any student not meeting this requirement must request an extension of the deadline.

A form for this request is available in the ECE Graduate Office. On this form, you must describe the reason(s) for the violation and list specific actions to be taken to remedy the situation. This form must be signed by every member of your doctoral advisory committee and the ECE Graduate Coordinator each semester past the deadline to allow your course registration to be processed.

2. Once you and Doctoral Advisory Committee have agreed upon the scheduling and you have scheduled the room (see the secretary in the main office, EE 122), you should request the ECE Graduate Office to formally schedule the Preliminary Examination. This must be done at least three weeks before the proposed date of the exam. At the time of scheduling, you should supply the ECE Graduate Office with the following in electronic form via e-mail to the Administrative Assistant to the Graduate Program:
 - a) Your name.
 - b) Title of the Research.
 - c) Your Primary Area.
 - d) Names of Doctoral Advisory Committee, with the Major Professor designated.
 - e) Faculty identifiers (see Appendix B) and areas—in case of faculty outside of the ECE Department, please supply the person's department and campus address.
 - f) Date, time and place of the Preliminary Examination.
 - g) An abstract (no more than 250 words) of the thesis proposal clearly defining the problem and its significance.
 - h) The completed "Final Exam Check Sheet" included with this Handbook (see Appendix E).
3. You should submit your written thesis proposal to all members of your Doctoral Advisory Committee at least two weeks before the Preliminary Examination.
4. If you pass the Preliminary Examination, the Doctoral Advisory Committee certifies that you have passed the Examination by signing the "*Report of the Preliminary Examining Committee*" furnished by the ECE Graduate Office.
5. If you fail the Preliminary Examination at least one academic session (academic year or summer) must elapse before a re-examination is permitted.

XV. DOCTORAL THESIS RESEARCH AND REVIEW PROCEDURES

The doctoral program is highly research oriented, hence the thesis is the most important single aspect of the program. Doctoral research work must be an original contribution in the candidate's area of specialization, and it should be of sufficient importance to merit publication.

As a doctoral student, you are expected to make satisfactory progress on your research each semester/session for which you are registered for EE 699. Unsatisfactory progress results in a grade of "U" in EE 699. If you earn a "U" grade in two consecutive sessions of EE 699, the school of ECE is required to take formal action and inform you and the Graduate School with regard to discontinuation or conditions for continuation of your graduate study. The ECE Graduate Coordinator will conduct a Formal Review of your program (see Section XIX, "*Formal Review*") in order to assess the circumstances

contributing to your performance and to determine the future of your program. The ECE Graduate Coordinator may require you to convene your Doctoral Advisory Committee to conduct a Formal Review Examination. The purpose of the Formal Review Examination is to allow your Advisory Committee to determine whether continuation of your doctoral program is merited. The Committee will recommend 1) continuation of your program, possibly with specific changes designed to promote progress towards your research, or 2) changing your project or transferring to a new Major Professor, or 3) termination of your program upon receipt of a grade of “U” in EE 699 in a future semester. In any event, your progress should be reviewed each session by the ECE Graduate Coordinator. The Graduate School may also review your progress. Should you fail to perform in either coursework or research on a level acceptable to your advisory committee, the ECE Graduate Coordinator, or the Dean of the Graduate School, your doctoral program may be terminated.

XVI. FINAL EXAMINATION

Upon completion of your thesis research you must submit a first draft of your thesis to your Major Professor no later than six weeks before the end of the semester, and the completed thesis no later than three weeks before the end of the semester.

The Final Examination is given after the thesis and all other requirements have been completed. The Final Exam covers primarily the thesis and related topics. The Final Examination Committee is the Doctoral Advisory Committee; however, the Dean of the Graduate School reserves the right to appoint additional Committee members.

There must be at least two academic sessions (counting regular semesters and summer sessions for which you are registered) between the Preliminary Examination and the Final Examination. You must take your Final Examination within five calendar years of passing your Preliminary Examination, or before the end of your eighth year of your doctoral program (ninth year for direct Ph.D. students), whichever comes first. Students unable to complete their thesis research and dissertation in this time must petition the ECE Graduate Coordinator for an extension. This request will initiate a Formal Review by the ECE Graduate Coordinator. See Section XIX, “*Formal Review*” Your request for an extension must detail the reasons for the delay, and explain what actions you are taking to prepare to take the Final Examination at the earliest opportunity. Your Doctoral Advisory Committee members must sign your request, indicating whether or not they support your request, and are invited to comment on your progress. The ECE Graduate Coordinator may either 1) grant an extension of one calendar year, or 2) require you to convene your Doctoral Advisory Committee to conduct a Formal Review Examination. The purpose of this Formal Review Examination is to allow your Advisory Committee to determine whether continuation of your doctoral program is merited. The Committee will make a recommendation for or against a one-year program extension. A recommendation against continuation will result in termination of your program. The format of the Formal Review Examination is the same as that for the Preliminary Examination, and includes both a written proposal and an oral presentation. Any requests for a subsequent extension (one year maximum per request) will require a Formal Review Examination.

When scheduling your Final Examination, please furnish the ECE Graduate Office with information regarding the time and place of the Examination and the thesis title **at least**

three weeks before the Final Examination. The ECE Graduate Office must then submit to the Graduate School Office a request for approval for the Doctoral Advisory Committee to conduct the Final Examination. Please be aware that late requests to schedule your Final Examination do not allow sufficient time to process your request and adequately publicize your Examination date. Any request to schedule a Final Examination less than three weeks in advance must be approved by the ECE Graduate Coordinator, and will be approved only in exceptional circumstances. At the time of scheduling, you should send the following information via e-mail to the Administrative Assistant to the Graduate Program:

- a) Your name.
- b) Title of the Research.
- c) Your Primary Area.
- d) Names of Doctoral Advisory Committee, with the Major Professor designated.
- e) Faculty identifiers (Appendix B) and areas—in case of faculty outside of the ECE Department, please supply the person’s department and campus address
- f) Date, time and place of the Preliminary Examination.
- g) An abstract (no more than 250 words) of the thesis proposal clearly defining the problem and its significance.
- i) The completed “Final Exam Check Sheet” included with this Handbook (see Appendix E).

The Doctoral Advisory Committee must report the results of the Final Examination to the ECE Graduate Coordinator within 24 hours after the Examination has been taken. Not more than one dissenting vote is acceptable in certifying the candidate to receive the degree. If the student is to receive the degree during the session in which the Examination is taken, the report must be received in the Graduate School by the posted deadline (approximately one week before the last day of classes in that session). Check on the Graduate School website or in the ECE Graduate Office for the specific deadline. If the examination is unsatisfactory, at least one semester or summer session must elapse before the Final Examination is repeated.

The time and location of the Final Examination will be distributed to the entire ECE faculty, and posted on the ECE Graduate Office bulletin board in the EE Building. University regulations permit visitors to attend the Final Examination. Such visitors are permitted to ask questions of the candidate, after having been recognized by the Chair of the Doctoral Advisory Committee (Major Professor), but they may not be present while the Doctoral Advisory Committee deliberates on its decision.

THESIS PREPARATION

You should pick up a copy of the “*Graduate School Manual for the Preparation of Graduate Theses*” and the School of Electrical Engineering “*Thesis Format: A Style and Notation Guide for the Preparation of Graduate Theses*” in the ECE Graduate Office. Both documents are also available on the web at:

<http://www.ece.purdue.edu/~andy/thesis.html>

1. Before proceeding to write your thesis, you are strongly encouraged to meet the Thesis Format Advisor for ECE to review your plans to prepare your thesis and get answers to any questions about the document formatting requirements.

2. Two weeks prior to oral exam, deliver your thesis to the members of your examining committee.
3. The final exam must be completed before the last week of classes, but we strongly recommend you do not wait until this late date. Those who are registered for “*Exam Only*” must complete their final exam by the eighth week of classes (fourth week of a summer session).
4. On the day of the Final Exam, your Major Professor should pick up your file from the ECE Graduate Office. The file will contain two forms that need to be signed by your committee: “*Report of the Final Examination*,” Graduate School Form 11 and “*Thesis Acceptance*,” Graduate School Form 9. The “*Report of the Final Examination*” must be signed and returned with your complete file by your Major Professor to the ECE Graduate Office immediately after your exam.
5. Keep the “*Thesis Acceptance*” Form 9 until you have made all revisions that were requested by your committee, and obtained the signatures of all committee members. **Please Note:** ECE format approval can only be done by the Thesis Format Advisor. The Graduate School will not accept Form 9 unless it is signed by the Thesis Format Advisor. Your Major Professor is not responsible for format approval; and he/she should **not** sign Form 9 at the bottom under “*Format Approved by.*”
6. You should schedule an appointment with the Thesis Format Advisor as early as possible to allow time to make any changes necessary to bring your thesis in compliance with format requirements.

After the Thesis Format Advisor has approved your thesis and added his signature to Thesis Acceptance Graduate School Form 9, you must bind the “*Thesis Acceptance*” form **into the front of the copy to be deposited with the Thesis Approval Office** and take it to Department Head for his signature. **Please Note:** the Department Head will sign only if you follow these steps in this order. You will need to schedule an appointment with the Department Head (via his secretary in the Main Office).

THESIS DISTRIBUTION

Distribution of final thesis is as follows:

1. Two copies (one bound and one unbound), with the Department Head’s signature, to Thesis Approval Office, Room 279, Stewart Center, on or before the last day of the session in which the student is a candidate.
2. One copy to your Major Professor.
3. A copy to any member of your advisory and/or examining committee who wants one.
4. One copy to the ECE Graduate Office (this copy is sent POTR Library).

XVIII. RESEARCH IN ABSENTIA AND OFF-CAMPUS STUDENTS

Under unusual circumstances, it is sometimes possible for graduate students to complete their research in absentia. We have observed that it is very difficult for students to complete their degree requirements in absentia status, and we seldom recommend this course of action. You should consider this only when you are within one year of completing your work. Permission for research in absentia status must be obtained from the Graduate Council of the University and the request for research in absentia must be initiated by the student's Major Professor on forms available in the ECE Graduate Office. The Graduate School must receive the Request Form at least one month prior to the beginning of the initial session for which absentia registration is sought. Research in absentia is not permitted until after you have completed your course work, passed the Preliminary Exam, and made substantial progress on the Ph.D. thesis research. In addition to the graduate school regulations governing research in absentia, as outlined in the Graduate School Bulletin, the School of Electrical and Computer Engineering has established the following rules to apply to all requests for permission to register for research in absentia:

1. All requests for research in absentia must be approved by the ECE Graduate Coordinator.
2. The official request form (Graduate School Form 12) should be accompanied by a statement, approved by all members of your Doctoral Advisory Committee, clearly specifying the reasons for the request.
3. If your research requires the use of facilities that are available elsewhere, but not at Purdue, you should retain your University appointment, register as a regular student and file a request for "*Change of Duty Station.*"
4. When approved, permission to register for research in absentia will be valid for an initial period of one calendar year. Any request for an extension of this time initiates a Formal Review by the ECE Graduate Coordinator. You must submit a written progress report and a complete explanation of why the deadline for completion within one year was not met. In addition you must convene your Doctoral Advisory Committee to conduct a Formal Review Examination (see Section 5.XX "*Formal Review*"). The committee will make a recommendation for a) a one year extension of your research in absentia status, b) termination of your research in absentia status (requiring you to return to Purdue), or c) termination of your doctoral program. Students granted an extension of the one year limit must submit a written progress report to their Doctoral Advisory Committee and to the ECE Graduate Office prior to every registration for Research In Absentia. Subsequent requests for an extension of your research in absentia status are subject to the same review procedures.
5. You must register for research in absentia every semester, not including summer sessions, from the initial approval until all requirements are completed.

XIX. FORMAL REVIEW

In the case of some students' program, there may be signs of less than satisfactory progress towards the completion of the doctoral degree. Examples include:

1. Two consecutive grades of "U" in EE 699.
2. Failure to take the Final Examination within five calendar years of passing the Preliminary Examination, or before the end of the eighth year of the doctoral program (ninth year for direct Ph.D. students).
3. Failure to take the Final Examination within one calendar year of beginning research-in-absentia status.

In these circumstances, the ECE Graduate Coordinator will conduct a Formal Review of your program. This Formal Review may include any or all of the following:

1. A written explanation by the student of the circumstances that have led to the academic problems and a proposed remedy,
2. Interviews with the student, members of the doctoral advisory committee, other faculty, students, or staff who have knowledge of the student's program,
3. A Formal Review Examination of the student, conducted by the student's doctoral advisory committee.

The format of the Formal Review Examination is similar to that of a Preliminary Examination, and will include a written proposal or thesis and an oral presentation. The purpose of this examination is to allow the Advisory Committee to recommend for or against continuation of the student's doctoral program. If the committee's recommendation is in favor of continuation, the committee should also recommend any changes to the student's program that may lead to renewed progress.

The ECE Graduate Coordinator, after considering all the available evidence, will inform the student, the Doctoral Advisory Committee, and the Graduate School of the decision for or against the student's continuation in the program.

XX. RE-ENTRY INTO THE DOCTORAL PROGRAM

If a student in the doctoral program does not register at the West Lafayette Campus for three or more consecutive academic sessions, he/she must submit a new application for re-entry to the doctoral program and obtain approval from the ECE Graduate Office and the Graduate School before any subsequent registration is permitted. Registration for research in absentia is considered as registration at the West Lafayette Campus.

These students are required to submit new applications (ECE application and Graduate School application) as well as updated transcripts (if the applicant has pursued any academic studies in the interim). The student may also be required to submit a personal statement, and new letters of recommendation.

Five-year Rule: Course credits earned by a student whose graduate study and/or professional activity has been inactive for five years or more cannot be used on a plan of study for an advanced degree. A plan of study approved prior to such a period of inactivity is invalid. A Preliminary Examination passed prior to such a period of inactivity is invalid.

XXI. PETITIONS TO THE GRADUATE COMMITTEE

All graduate students have the right to petition for exceptions to any existing rules if they feel that the circumstances are sufficiently unusual to warrant special consideration. The first step is to request an appointment with the ECE Assistant Head for Education to see if a resolution can be found at that level. If not, the student may file a petition with the ECE Graduate Committee. The petition should be delivered in writing to the Chair of the Graduate Committee and should contain the approval (or disapproval) of each member of the student's advisory committee.

Appendix A: PH.D. DEGREE MILESTONES

Following are milestone events that should be used as a guide to accomplishing needed tasks:

PRIOR TO FIRST REGISTRATION

- ◆ Consult with three faculty members for advice on possible courses to take in the first semester.
- ◆ Come to the ECE Graduate Office (EE Building, Room 135) to register.

DURING FIRST SEMESTER

- ◆ Satisfy **all admission conditions** (such as presentation of your final transcript to the Graduate School).
- ◆ Satisfy the English proficiency requirement. If you do not satisfy this requirement in the first semester, do so in the earliest semester possible.
- ◆ Select a Major Professor and an advisory committee.
- ◆ Submit a preliminary plan of study (**prior to registration for second semester**).
- ◆ Satisfy the EE 694 seminar requirement. If you do not satisfy this requirement in the first semester, do so in the earliest semester possible.

THIRD SEMESTER OR EARLIER

- ◆ Begin research.

BEFORE REGISTRATION FOR FOURTH (SIXTH) SEMESTER

- ◆ File final plan of study.

BEFORE BEGINNING OF FOURTH (SIXTH) SEMESTER

- ◆ Take the Qualifying Examination.

BEFORE COMPLETION OF FOURTH SEMESTER

- ◆ Satisfy English Proficiency Requirement.

BEFORE COMPLETION OF SIXTH (EIGHTH) SEMESTER

- ◆ Take the Preliminary Examination.

DURING FINAL SEMESTER

- ◆ Declare candidacy on the registration form when you register for your final semester.
- ◆ Review your plan of study to ensure that all degree requirements are met.
- ◆ Obtain thesis format approval from the Thesis Format Advisor prior to scheduling the final exam.
- ◆ Schedule final oral exam with your Major Professor, your advisory committee, and the ECE Graduate Office **at least 3 weeks prior** to the proposed date of the exam. The final exam must be completed before the last day of classes, but we strongly recommend you do not wait until this late date. Those who are registered for “*Exam Only*” must complete their final exam by the eighth week of classes (fourth week of a summer session).
- ◆ Distribute copies of your thesis to advisory committee **at least two weeks before** the oral exam.
- ◆ See Section 0, “*Final Examination*,” for more detailed information on submitting your request for final exam, and Appendix E for graduate faculty identifier numbers.

Appendix B. GRADUATE FACULTY IDENTIFIERS

Graduate faculty identifiers must be listed on the plan of study following each committee member's signature. Below is a list of graduate faculty identifiers. For faculty in other departments or campuses, please check with the ECE Graduate Office.

| | | | |
|-----------------------|-------|--------------------------------------|-------|
| Adams, George | C3066 | Lehnert, James | C2648 |
| Allebach, Jan | C2387 | Lundstrom, Mark | C2194 |
| Bagwell, Philip | C3632 | Mazumdar, Ravi | C5156 |
| Bahsir, Rashid | C5060 | Melloch, Michael | C2649 |
| Balakrishnan, V. Ragu | C4283 | Meyer, David | C2456 |
| Bell, Mark | C3289 | Mowle, Frederic | C0769 |
| Bouman, Charles | C3290 | Neudeck, Gerold | C0770 |
| Bourland, Joe | C1681 | Nyenhuis, John | C2512 |
| Brodley, Carla | C4278 | Ogborn, Larry | C0773 |
| Capano, Michael | C5301 | Ong, Chee-Mun | C0774 |
| Chen, Chin-Lin | C0735 | Pierret, Robert | C0778 |
| Cooper, James | C2508 | Pollak, Ilya | C5340 |
| Coyle, Edward | C2386 | Pomeranz, Irith | C5363 |
| Datta, Supriyo | C2258 | Rosenberg, Catherine | C5157 |
| DeCarlo, Raymond | C1658 | Roy, Kaushik | C4186 |
| Delp, Edward | C2643 | Schwartz, Richard | C0781 |
| Doerschuk, Peter | C3463 | Shalaev, Vladimir | C5571 |
| Ebert, David S. | C5438 | Shroff, Ness | C4285 |
| Eigenmann, Rudi | C4447 | Silva, L.F. | C0785 |
| Elliott, Daniel | C2644 | Siskind, Jeffrey M. | C5644 |
| Ersoy, Okan K. | C2822 | Sudhoff, Scott | C3751 |
| Fuchs, Kent | C4628 | Swain, Philip | C0788 |
| Fukunaga, Keinosuke | C0743 | Talavage, Thomas | C5018 |
| Furgason, Eric | C0745 | Tan, Hong | C5017 |
| Geddes, Leslie | C0748 | Vijaykumar, T.N. | C4884 |
| Gelfand, Saul | C2987 | Wasynczuk, Oleg | C2064 |
| Ghafoor, Arif | C3630 | Webb, Kevin | C3405 |
| Givan, Robert | C4716 | Weiner, Andrew | C3904 |
| Gray, Jeffery | C2646 | Wodicka, George | C3286 |
| Harper, Mary | C3285 | Zak, Stanislaw H. | C2513 |
| Hu, Y. Charlie | C5641 | Zoltowski, Michael | C2911 |
| Jamieson, Leah | C0784 | | |
| Janes, David | C3287 | | |
| Kak, Avinash | C0756 | Courtesy Appointments in ECE: | |
| Kashyap, Rangasami | C0757 | Downar, Thomas (Nuc Eng) | C2641 |
| Katehi, Linda P. B. | C5677 | Hirleman, Daniel (Mech Eng) | C5151 |
| Koh, Cheng-Kok | C5061 | Li, Zhiyuan (CS) | C4690 |
| Koivo, Antti | C0758 | Marinescu, Daniel (CS) | C2484 |
| Krause, Paul | C0759 | Pizlo, Zygmunt (Psych) | C3779 |
| Krogmeier, James | C3464 | | |
| Lee, C S. George | C2825 | | |

Appendix C

Sample Ph.D. Preliminary Plan of Study

See pdf file of same name

Appendix D: Final and Preliminary Examination Information

The ECE Thesis Format advisor is Andy Hughes (andy); in his absence, Linda Coady (coady) is the Thesis Format advisor.

Final and Preliminary Examination requests should be sent electronically to Linda Coady at coady@ecn.purdue.edu

Please follow the directions as listed above—refer to Section XIV. “Preliminary Examination” and Section XVI. “Final Examination.”

Please you must follow the directions as listed above and complete the check sheet before your request will be processed.

TO RESERVE A ROOM FOR YOUR THESIS DEFENSE:

- Go to <http://www.ecn.purdue.edu/ECN/RAT/>
- Select the room you wish to schedule and check the availability of that room.
- After confirming the availability of the room, select "Request Reservation."
- Click on Matt Golden under the list of managers. You will then be able to submit the request online.
- Should the system not allow you to make a request, send the request by email to goldenm@ecn.purdue.edu

Appendix D: FINAL/PRELIMINARY EXAM CHECK SHEET

Before you submit your examination request via email (coadyl), please fill out this check sheet, sign it, and bring it to the ECE Graduate Program Office.

- I have reserved a room for my examination, following the directions as above.
- I have consulted with my advisory committee, and have found a date and time for my examination that is acceptable to all. In addition, all committee members intend to be physically present for the examination.*

* In case a member of your examination committee is on a long-term absence from campus (such as sabbatical leave), you may hold your examination in their absence, if you make alternate arrangements for that committee member to examine your work. If this is the case, please explain the reason your committee member will be absent, and indicate *in detail* what arrangements you have made to present your examination. **Please note: This request must be approved by the Graduate Office before your examination request will be processed. CHAIRS OR CO-CHAIRS MUST BE PHYSICALLY PRESENT FOR YOUR EXAMINATION.**

- I will deliver a copy of my thesis to all committee members at least two weeks before the exam.
- My thesis should be kept confidential.
- I understand that I must send an electronic exam request to Linda Coady (coadyl) three weeks before my exam date, following the directions as above. I also understand that once this request is processed, I cannot alter my thesis title or abstract.

Name _____
Please Print

Date _____

Your Signature