Master's Program Handbook

Graduate and Research Committee
Electrical and Computer Engineering
School of Engineering and Technology
Indiana Univ. Purdue Univ. Indianapolis

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1 Introduction

This handbook contains the requirements and regulations for the Master's degree programs offered by the Department of Electrical and Computer Engineering (ECE) at Indiana Univiversity Purdue University Indianapolis (IUPUI). Included is information about the types of Master's degrees, degree requirements, minimum academic standards, the advisory committee, plan of study (POS), registration, and the Master's thesis.

Our engineering degree programs are administered jointly by IUPUI and Purdue University at West Lafayette. Your degree is granted by Purdue University upon successful completion of all degree requirements in the Department of Electrical and Computer Engineering at IUPUI. The Purdue School of Engineering and Technology Office of Graduate Programs works closely with the Purdue University Graduate School in West Lafayette as well as with the IUPUI Graduate Office in a campus-wide coordination and administration of graduate engineering programs. Additionally, if you are an international student you will have contacts with the Office of International Affairs at IUPUI regarding visas and immigration requirements.

A strength of the academic component of the Master's program is that each student creates his/her own plan of study (POS), a document that defines the student's academic program. The degree requirements, which have elements of depth and breadth, afford flexibility for developing a POS that best suits your needs and goals. The information in this handbook is intended to assist you in setting up your POS and advisory committee. In developing your POS, you should consult with your advisory committee, in particular your major advisor. Your POS requires the approval of all advisory committee members, as well as the approval of the ECE Graduate Committee, and the Graduate School.

Students in the Master's program must identify an ECE primary area from the four defined areas: Automatic Control, Robotics, and System (AC); Communication and Signal Processing (CS); Computer Engineering (CE); and VLSI and Circuit Design (VC). Within the ECE graduate program, the primary area is defined as the one of the above four areas closest to your interests or thesis research. Courses outside of your primary area are to be considered as part of one or more related areas. On your plan of study the courses are to be identified as belonging to either the ECE primary or ECE related areas.

In addition to this handbook, there are other resources available in the Graduate School Office and the ECE Office, as well as on the ECE Graduate website [1].

2 Master's Degrees

The Department of Electrical and Computer Engineering offers the following Master's degrees:

- Master of Science in Electrical and Computer Engineering (MSECE)
- Master of Science in Engineering (MSE)
- Master of Science (MS)

The MSECE, MSE and MS are awarded to students who have been accepted into and satisfied the requirements of the ECE Master's program. The specific degree awarded depends on the undergraduate background of the student and the student's willingness to make up deficiencies (if any) in undergraduate ECE background as outlined below:

[1] `http://www.engr.iupui.edu/ece/graduate.shtml?menu=grad`

	Thesis Option	Non-thesis Option
ECE Core Courses	At least 6 cr hrs	
Math *See Appendix G*	At least 3 cr hrs	
Primary Area	At least 15 cr hrs	
Masters Thesis	9 hrs of ECE 698	NONE
Project	NONE	At most 3 hrs of ECE 696/ECE 697
Total	A total of 30 hrs	

Table 1: Summary of Thesis and Non-thesis Options

The MSECE degree is awarded to students who satisfy the requirements of the ECE program and any one of the following conditions:

- An undergraduate degree in CmpE, ECE, or EE from an ABET [2] accredited institution.
- An undergraduate degree in Computer Science, if the student's course work includes junior or senior level courses in a) operating systems, b) compiling, and c) computer architecture. Prerequisite material for these courses is implicitly required.
- Any other undergraduate degree, plus satisfaction of a specified set of ECE undergraduate requirements. Refer to Appendix A for the detailed description of ECE undergraduate requirements.

The MSE degree is awarded to students who satisfy the requirements of the ECE program or interdisciplinary emphasis requirements, and who hold an undergraduate degree in engineering (other than CmpE, ECE, or EE) from an ABET accredited institution, and who have not satisfied the specified set of ECE undergraduate requirements (Appendix A).

The MS degree is awarded to students who satisfy the requirements of the ECE program, or interdisciplinary emphasis degree requirement, and who hold an undergraduate degree in a non-engineering discipline, and who have not satisfied the specified set of ECE undergraduate requirements.

Although there are several options available among these degrees, they all represent essentially the same level of achievement. The special requirements of the Department of Electrical and Computer Engineering are set forth in this handbook. Additional regulations are contained in the Graduate School Catalog available from the Graduate School.

2.1 Program Emphasis: ECE or Interdisciplinary

All students must have a minimum of 15 credit hours of ECE graduate courses on their plans of study.

ECE Program Students pursuing the ECE program must identify a primary area and a related area within ECE. The primary areas are identified in Table 2.

Interdisciplinary Program A student in the ECE Master's degree program may choose an interdisciplinary emphasis. Students following the interdisciplinary program must identify an ECE primary area and a non-ECE related area.

2.2 Thesis or Non-thesis Options

Either the thesis or non-thesis option must be selected for the ECE and the interdisciplinary program. Requirements for both options are summarized in Table 1, and the detailed requirements are described in Section 3. The ECE department strongly recommends full-time students select the thesis option in order to be considered for financial aid and assistantships.

3 Degree Requirements

3.1 Total and ECE Graduate-Level Credit Hours

All students must complete a total of 30 credit hours selected by the student and approved by the advisory committee. The requirements are the same for all MS degrees, at least 15 credit hours must be ECE graduate courses. One 3 credit

[2] http://www.abet.org

Primary Area	Abbr.	Core Course
Automatic Control, Robotics, and System	AC	ECE 602
Communication and Signal Processing	CS	ECE 600
Computer Engineering	CE	ECE 608
VLSI and Circuit Design	VC	ECE 606/ECE 608

Table 2: Primary Areas within ECE and the core course associated with it.

hour course from the list in Appendix B is required to meet the Mathematics requirement, see Section 3.4). No more than 3 additional credit hours can taken outside of the ECE department (see Section 5.3) will be accepted for the plan of study. Pass/No-Pass grades are not permitted for courses on the Master's plan of study.

3.2 Breadth Requirement

The area core courses cover introductory material essential to the respective ECE research area. Students must successfully complete a minimum of two (2) core courses from ECE 600, ECE 602, ECE 604, ECE 606, ECE 608, and ECE 610 to ensure a limited breadth of knowledge within the program. A student must select the core course for their declared ECE primary area. The primary area is to be chosen from one of the four defined areas listed in the table below. The third column of the table indicates the core courses associated with each primary area.

Only courses offered from Indianapolis or West Lafayette campuses can be used to satisfy the breadth requirement. Regional campus courses and transfer courses must not be used toward the breadth (core course) requirement

3.3 Depth Requirement

Students must successfully complete at least fifteen (15) credit hrs in the primary area they have declared. The core course in their primary area and thesis credits (if thesis option is selected) can be applied towards this requirement. Appendix G details the list of courses in each primary area.

3.4 Math Content Course Requirement

A minimum of three (3) approved math oriented course credit hours is required for all degree programs. The approved mathematics, statistics, electrical & computer engineering, computer science, and physics courses meeting the math requirement are given in Appendix B. Note the course used to meet the Math Requirement cannot also be used to satsify the Breadth Requirement.

3.5 Research Opportunity

Research is not required for the master's degree but is highly encouraged. There are research opportunities for both the thesis and non-thesis options.

non-thesis option Research credit hours are not required for students on non-thesis option. However, a maximum of three (3) credit hours of ECE 696 (Advanced Projects) and/or ECE 697 (Directed Reading) are allowed on their plan of study for the non-thesis option. The course ECE 698 is not allowed on the POS of students pursuing the non-thesis option, and ECE 698 will not be converted to either ECE 696 or ECE 697.

thesis option Students pursuing the thesis option are required to register for a minimum of 9 hrs of ECE 698 Research (thesis) toward their MS degree. Students may register more than 9 hrs of ECE 698, but students are required to take a minimum of 21 hrs of regular courses.

Students should check with their major professor to determine the number of ECE 698 credit hours to take per semester. ECE 698 credit hours qualify as ECE graduate-level credit hours and may be used to satisfy the ECE depth requirement as described in Section 3.1. ECE 696 and ECE 697 credit hours are not allowed on the POS of students pursuing the thesis option.

3.6 Minimum Academic Requirements

Good Academic Standing. The ECE Department maintains the following minimum standards to be in *good academic standing* in the Master's degree program.

To be in good academic standing, a Master's graduate student must maintain a cumulative grade point index of at least 3.00 out of 4.00 over the graduate courses they have taken as graduate student, as well maintain at least a 3.0 semester GPA on graduate courses taken each semester. A graduate student who is not in good academic standing at the end of any semester or summer session maybe given an academic warning and/or placed on probation. Decisions concerning probation/academic warning are made by the ECE Graduate Committee. A student on probation may not be permitted to register for further graduate courses, pending academic review and approval by the ECE Graduate Committee.

The cumulative grade point index used for the POS is calculated using the courses that are on the POS. If a course is taken more than once while the student is enrolled as a graduate student, only the most recent grade received in the course will be used in computing the grade point index. Transfer courses are not included in the computation of the cumulative grade point average. University requirements state that no grade below 'C-' is allowed for a course that is on the approved POS. All Master's students must achieve a final cumulative grade point index of 3.00 or higher for courses that are on the POS. Any course on the POS for which a grade of 'D' or 'F' is obtained must be repeated. In the event of a deficiency in the cumulative grade point index, a course may be repeated but only the most recent grade received will be used in computing the index.

3.7 English Requirement

All ECE graduate students must demonstrate acceptable proficiency in written English before graduating. Students will not be allowed to graduate until this requirement has been met. All teaching assistants must satisfy additional oral English proficiency.

The ECE department strongly recommends that students fulfill the English requirement as early as possible (first semester) in their academic program. The English proficiency requirements are detailed in Appendix C.

3.8 Residency and Load Requirement

3.8.1 Semester Load

All international students must be enrolled full-time to maintain appropriate visa status. To qualify as a full-time student, a student must satisfy one of the following criteria:

- be enrolled for nine (9) credit hours, or
- hold a research or graduate assistantship and be registered for at least six (6) credit hours.

3.8.2 Residency Requirements

The total number of hours of academic credit used to satisfy residency requirements consists of all course credit hours that appear on the plan of study, other graduate course credit hours on the IUPUI transcript with grades of 'B' or better, and thesis research hours that appear on the transcript. At least one-half of the total credit hours used to satisfy degree requirements must be earned in residence on the IUPUI campus, where the degree is to be granted. Course credits obtained via televised instruction on the IUPUI campus shall meet the residency requirement.

4 Master's Advisory Committee

The Master's Advisory Committee shall consist of a minimum of three faculty members. The duties of this committee are to assist the student in the preparation of the plan of study, advise the student on research related to the Master's thesis, and conduct examinations on the Master's thesis. The student shall select a major Professor who will serve as the Chair of the advisory committee. The major professor/student relationship must be a mutually acceptable one. With the advice and approval of the major professor, the student will select the remaining members of the advisory committee. The Chair of ECE Graduate Program may serve as the major professor for a student with a non-thesis option or for a new coming student by default. The following rules and guidelines will help you to select your advisory committee:

1. The major professor must be a member of the ECE faculty and should be a member of the primary area that the student has declared. Refer to Appendix D for the list of faculty and their areas.
2. At least one member of the advisory committee must be from the student's primary area, and another member should be from the ECE Related Area.

3. If you have selected the thesis option and 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 ECE faculty and should be a member of the primary area that you have declared.
4. A majority of your advisory committee must be composed of members of the ECE faculty.
5. A special member, defined as a person without regular certification, may be added as the fourth member of the committee.
6. Faculty members from other universities, researchers from industry, and non-faculty research staff from the campus have to be approved for special certification by the Graduate School for them to be members of the advisory committee. A student may initiate a request for special certification in the ECE Graduate Office. A current and complete vita for the special member has to be submitted along with the request.

The advisory committee, as agreed upon by the student and the major professor, shall be presented to the ECE Graduate Office and the Dean of the Graduate School for approval and formal appointment. The Dean may appoint additional members if it seems advisable. The advisory committee is established when the plan of study is approved. Changes to the advisory committee require a 'Change in Plan of Study' form GS-13 to be completed.

5 Master's Plan of Study

All Master's students must file a plan of study (POS) *before the end of their first semester*. This should be uploaded to the dropbox located on the Oncourse ECE GRAD webiste. This requirement helps to ensure a clear academic couse plan by the student, sets a clear pathway toward completion of the student's degree, and helps the school plan and monitor the overall ECE graduate program. For this reason, registration for subsequent semesters can be restricted by the ECE Graduate Committee until the plan of study has been filed. If necessary, changes can be made to the plan of study at a later date, subject to the restrictions cited in Section 5.1. The plan must be appropriate to meet the needs of the student's chosen field as determined by the advisory committee, and must be approved by the ECE Graduate Program and the Graduate School.

5.1 Changing Your Plan of Study

It is recognized that as a student's program progresses there may arise conditions that make it desirable to change the program or the plan of study. Indeed such changes, when based on sound academic reasons, are allowed. However, there are regulations to be observed for the change. Specifically,

- A course may not be removed from an *approved* plan of study once the course has been taken and a grade of 'D' or lower is received. This is a Graduate School rule. Refer to Appendix E for the approval process of the plan of study.
- Any change/s to a plan of study requires approval of the student's advisory committee and the ECE Graduate Program.

To make changes to an approved plan of study, Graduate School Form 13 'Request for Change to the Plan of Study' has to be completed and filed to the Graduate School. This form is also used to request a change of major professor and/or other advisory committee members, or for a change of the Master's degree option. The form is available from the School's Graduate Programs Office or from the ECE Graduate website `http://www.engr.iupui.edu/gradprogs/gradForms.shtml?menu=admin`.

5.2 Undergraduate, Transfer, and Excess Course Credits

5.2.1 Transfer Credits

A maximum of twelve (12) graduate-level credit hours earned at an accredited university may be applied toward the Master's degree and entered on the Master's plan of study. All courses transferred must be graduate-level courses, must not have been used to meet the requirements for another degree, and must be completed with a grade of 'B' or better. Grades from transfer courses are not included in computing the grade point average.

5.2.2 Excess Course Credits

Up to twelve (12) credit hours of graduate-level courses taken before a student was admitted to the ECE Master's program may be applied toward the Master's degree and entered on the Master's plan of study. Allowed courses include those taken:

1. as excess undergraduate-degree credit taken at senior-year standing;
2. in non-degree status;
3. while seeking a degree in other departments or schools, if you subsequently request to transfer to ECE;
4. while seeking a degree in other departments or schools, if you subsequently request dual-degree status in ECE. For dual-degree students seeking a PhD in another department or school and a Master's degree in ECE, the ECE Master's degree plan of study may not contain any courses offered by or dual-listed with the student's other department or school.

5.2.3 Special Approval Requirements

Without exception, all transfer, and excess course credits used on the Master's plan of study must be approved by your advisory committee and by the ECE Graduate Program. The steps to follow in requesting approval to include such credits on the Master's plan of study are:

1. Add the course to your plan of study.
2. If a transfer course or a non-ECE course was taken at other universities, show a copy of the catalog description of the course to your advisory committee members and bring the catalog description to the ECE Graduate Office.
3. If you are transferring a course from another university, the ECE Graduate Program will also require an original transcript showing the grade earned and a statement from an official at the university where the course was taken certifying that the course was not used to fulfill requirements for any other degree.

5.3 Credits taken outside the ECE Department

One 3 credit Mathematics course must be chosen from the list in Appendix B for the plan of study in order to satisfy the Mathematics requirement (see Section 3.4). Only 3 additional credits, taken from another department can be counted on the plan of study. These credits can be selected from the list in Appendix B, or the credit selection (i.e. course) must be approved by your advisory committee and by the ECE Graduate Program, this approval *must be obtained prior* to taking the course.

6 Registration

The registration period begins during the third week of October for the Spring semester and during the third week of March for the Summer sessions and Fall semester. Keep a look out for announcements on registration as these dates approach. All current ECE graduate students must register during this registration period (October-November and March-April). Note that late registration incurs a penalty fee. We encourage you to select your courses and register early, as department's decisions to cancel courses that have low enrollment may affect your course options.

Dropping and Adding Courses. Be aware of procedures, late fee charges, and refunds deadlines for dropping and adding of courses. Students may drop/add courses online during the open registration period. However, once the Open Registration period ends, online registration will not be available and students must use a Drop/Add paper form to change a course. Information on procedures and deadlines are available on the Registrar's website [3].

Inactive Academic Status. Students who do not enroll in classes for three (3) consecutive academic sessions, including summer session, will be automatically placed into *inactive academic status*. Students who have been placed in inactive academic status are required to apply for and be granted re-admission to the graduate program before they are permitted to enroll again. The application process for readmission consists of completing and submitting a new application — other supporting application materials are not required for re-admission.

Students must wait for their applications for re-admission to be officially approved by the Purdue University Graduate School before enrolling for classes. Registration activities that take place while in the inactive academic status and before a new application for re-admission has been officially approved by the Graduate School are considered invalid registrations and will not count toward graduate credit.

7 Master's Thesis and Final Examination

For those pursuing the thesis option, a thesis must be prepared according to a preset format and processed (revised, signatures obtained, bound, distributed) following specified procedures. Likewise, the student must present and defend

[3] `http://registrar.iupui.edu`

his/her work in a Final Examination. Information relative to the preparation and processing of the thesis is contained in Appendix D. Appendix E outlines the steps involved in scheduling the final examination.

8 Continuation for the Ph.D. Degree

In order to continue graduate work toward the PhD degree after completion of the Master's degree, a student must be admitted to the PhD program. Admission is based on evaluation of the student's potential for success at the PhD level. The GPA of a typical successful applicant is 3.6 or higher. At a minimum, the student must have a GPA of 3.3 and a positive recommendation from his/her advisory committee. Application forms for admission to the PhD program are available in the ECE Graduate Office, and should be filed at the beginning of the final semester of the student's Master's program.

9 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 petition should be delivered in writing to the Chair of the ECE Graduate Committee and should contain the approval (or disapproval) of each member of the student's advisory committee.

A Undergraduate Course Requirement

This appendix describes undergraduate course requirements for the MSECE degree program to qualify a BS major other than CmpE, ECE, and EE.

A.1 Courses Required

Graduates from non-ABET accredited programs or graduates of non-engineering majors, including technology and science programs, may complete and be awarded the Master of Science in Electrical and Computer Engineering degree (MSECE) if the following undergraduate course requirements are fulfilled, in addition to completing the Master's degree requirements:

- ECE 201, ECE 264, ECE 301, ECE 302,
- One of ECE 305 and ECE 311, ECE 408
- Two of ECE 255, ECE 270, ECE 321, and ECE 382,
- One of ECE 362, ECE 359, and ECE 365; and
- One undergraduate lab of ECE 207, ECE 208, and ECE 282.

Graduates from Computer Science discipline may be asked to take either ECE 301 or ECE 302. The engineering courses listed above require the following math and/or science prerequisites or equivalents:

MATH 165	Analytic Geometry and Calculus I
MATH 166	Analytic Geometry and Calculus II
MATH 171	Multidimensional Mathematics
MATH 261	Multivariate Calculus
MATH 266	Differential Equations
PHYS 251	Heat, Electricity, and Optics

A.2 Ways to Fulfill the Requirements

The "Undergraduate Requirements" are administered by the ECE department and the Graduate Programs Office. A student may fulfill the requirements for an undergraduate electrical and computer engineering course through the following ways:

1. Taking the indicated course and receiving a grade of 'B' or better.
2. For a course offering a comprehensive final exam, taking the final exam for the course and ranking in the top 30% of the class taking the exam. (This is available only to students who are not enrolled in the course.)
3. Establishing that s/he had obtained a grade of 'B' or better in an equivalent course.
4. Taking a closely related Electrical and Computer Engineering graduate course such as
   ECE 201/ECE 554, ECE 270/ECE 559, ECE 301/ECE 538, ECE 302/ECE 600, ECE 305/ECE 606, ECE 311/ECE 604, ECE 359/ECE 608, ECE 365/ECE 565, ECE 408/ECE 595-RTOS, ECE 382/ECE 602, and ECE Lab/ECE 557, receiving a grade of 'B' or better.

Note that the purpose of the undergraduate requirements is to give substance to the claim that the person receiving the MSECE does indeed have an electrical and computer engineering background. The requirements are not related to the prerequisites for graduate courses.

A student whose undergraduate degree is not in Electrical and Computer Engineering and who does not wish to complete the undergraduate requirements specified here may receive either MSE for students whose undergraduate degree is in another engineering discipline, or MS for students whose undergraduate degree is in a non-engineering discipline degree[4]. Students following the interdisciplinary program may receive the MSE or MS degree.

B Mathematics Requirement

The following list of courses have been approved for meeting the mathematics requirement.

[4]Note that any student who was conditionally admitted and was required to complete certain requirements, these requirements need to be satisfied in spite of the MS degree option.

B.1 Mathematics Courses

Courses numbered MATH 511 and above are acceptable with the exceptions listed below:

1. MATH 519 (STAT 519) is *not* acceptable due to significant overlap with ECE 600
2. MATH 504 is acceptable for students whose primary area is either Automatic Controls or Communications and Signal Processing;
3. MATH 527 is *not* acceptable for Communications and Signal Processing majors.
4. Math education related courses are not acceptable.

B.2 Electrical & Computer Engineering Courses

ECE 580 Optimization Methods for Systems & Control
ECE 595 Foundations of Advanced Engineering I
ECE 600 Random Variables

B.3 Computer Science Courses

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

B.4 Statistics Courses

STAT 528 Introduction to Mathematical Statistics
STAT 529 Applied Decision Theory and Bayesian Statistics
STAT 532 (MATH 532) Elements of Stochastic Processes
STAT 533 Non-Parametric Statistics
STAT 538 (MATH 538) Probability Theory I
STAT 539 (MATH 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 (MATH 638) Stochastic Processes I
STAT 639 (MATH 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

B.5 Physics Courses

PHYS 600 Methods of Theoretical Physics I
PHYS 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 the student's major professor.

C English Language Proficiency Requirements

C.1 English as a Second Language (ESL) Requirements

All graduate degree-seeking international students whose English is not their first language must take the English Placement Test (English language proficiency examination) administered by the IUPUI English as a Second Language (ESL) Program before they are permitted to enroll for classes after admission.

Students tested with English language deficiencies are required to take all of the remedial courses determined by the ESL placements and receive passing grades on those courses. Students must begin taking the first ESL course in the first semester of enrollment and complete the requirements in sequence before graduation. Students with incomplete ESL requirements will not be approved for graduation. There is one exception to the rule: "Students placed into English G013 'Reading/Writing for Academic Purposes' may replace G013 with TCM 460 'Engineering Communication in Academic Context'."

C.2 SPEAK Test for International Graduate Teaching Assistants

All non-native speakers of English must be tested for their oral English proficiency before they are assigned duties that involve direct student contact (teaching assistant, laboratory assistant, graders, and tutors). Students must take and pass the SPEAK Test, a nationally standardized test before the students are given an academic appointment. Students who failed to obtain the required minimum scores will need to take an ESL course, G020 "Communication Skills for International Teaching Assistants" (3 credit hours) and take the test again before they can accept their appointments.

D ECE Graduate Faculty

The list below was revised on December 2009. An up-to-date faculty list is available on the ECE Graduate website [5]. Note the following abbreviation for primary areas: Automatic Control, Robotics and System (AC); Communication and Signal Processing (CS); Computer Engineering (CE); and VLSI and Circuit Design (VC).

Regular Graduate Appointment

Name	Identifiers	Area
Yaobin Chen	X0225	AC
Yung Ping Stanley Chien	X0224	CE
Lauren Christopher	X0565	CS, VC,CE
Yingzi (Eliza) Du	X0478	CS, CE
Russell C Eberhart	X0289	AC, CE
Mohamed El-Sharkawy	X0260	CS, CE
Dongsoo (Stephen) Kim	X0390	CS, CE
Brian S. King	X0412	CS, CE
Sarah Koskie	X0430	AC
Jaehwan (John) Lee	X0480	CE, VC
Lingxi Li	X0564	AC
Steven Rovnyak	X0425	AC
Maher E. Rizkalla	X0191	VC
David Russomanno	X0640	CE
Paul Salama	X0369	CS, CE

For other faculty graduate identifiers, see `http://www.engr.iupui.edu/gradprogs/facstaff_identifiers.shtml?=facstaff`

E Master's Degree Milestones

The following are "milestones" that should be used as a guide to accomplish needed tasks to complete the degree requirement:

[5] `http://www.engr.iupui.edu/ece/graduate.shtml?menu=grad`

- Prior to First Semester Registration:
  - Visit with the initial graduate adviser assigned to you about possible courses to take.
  - If necessary, contact ECE Graduate Program (SL 160) or the School's Graduate Programs Office (ET 215) for assistance with registration.
- During the First Semester:
  - Satisfy conditions for admission and/or English proficiency requirements, if relevant.
  - Select major professor (adviser) and advisory committee
  - Prepare the Master's plan of study and submit the plan prior to registration for the second semester to your drop box on the Oncourse website *ECE Grad* (see ECE Graduate Program for help to enroll onto this website)
- One Semester Prior to the Final Semester of Graduation:
  - Fill out an "Application for Graduation" form before the beginning of the final semester. The paper application is available in Graduate Office and on the ECE Graduate website `http://www.engr.iupui.edu/gradprogs/gradForms.shtml?menu=admin`.
  - Review your plan of study to see that all degree requirements are met. Revise the plan of study if necessary.
- The Final Semester (Thesis Option):
  - Thesis option students must attend a briefing session on thesis formatting and preparations for thesis defense. Check with the Coordinator for Graduate Programs on dates for the briefing session. The briefing session takes about 2.5 hours.
  - Obtain major professor's approval of the thesis prior to scheduling the final examination (defense). Find out from your major professor if confidentiality needs to be maintained for your research thesis. If confidentiality is required for your thesis, a request for confidentiality needs to be submitted to the Purdue Graduate School by completing Graduate School Form 15 "Request for Confidentiality of Thesis". Form 15 can be obtained from the ECE Graduate website.
  - File Graduate School Form 8 "Request for Appointment of Examining Committee" with the department and the School's Graduate Office a minimum of 3 weeks prior to the proposed date of final oral examination/thesis defense. Also, schedule the final examination (thesis defense) with major professor and advisory members at least 3 weeks in advance. You are required to meet the deadlines by which the final thesis examination must be completed. Register for "Candidacy 991" (0 credit hour) again in your final semester of graduation. Candidacy is required both the semester prior to and the final semester of graduation.
  - Distribute copies of thesis to members of the Advisory Committee at least 2 weeks before the oral exam to allow sufficient time for members to review the thesis.
  - Immediately following the oral exam ensure that your advisory committee members sign Graduate School Form 7 "Report of Master's Examining Committee" and submit the form at the Graduate Programs Office (ET 219).
  - After the exam and all necessary changes have been made to your thesis. Requirements concerning submission of thesis will be outlined in the briefing session for thesis preparation.
  - See Appendix H for more detailed information on submitting your request for final exam, and Appendix D for ECE graduate faculty identifiers.
- Final Semester (Non-Thesis Option):
  - Register for "Candidacy 991" (0 credit hour) again in your final semester of graduation. Candidacy is required both the semester prior to and the final semester of graduation.
  - Ensure that your advisory committee members sign Graduate School Form 7 "Report of Master's Examining Committee" and submit the form at the Graduate Programs Office by the deadline.

F Preparing The Master's Plan of Study

A plan of study form can be obtained from the ECE Graduate website [6] or from the School's Graduate Programs Office (ET 215). The plan of study must be typed. The following are guidelines and instructions for preparing the plan of study.

1. Review the preceding portions of this Handbook and the list of 500- and 600-level courses to determine the degree requirements for the particular degree and option you wish to pursue, and the courses of most interest to you, which will enable you to meet the degree requirements. Verify that the courses you need will be offered at a time when you wish to take them. The list of 500- and 600-level courses are available on the web and in the ECE office.
2. Fill out a draft of your plan of study (preliminary). Label 'P' for primary area courses and 'R' for related area courses.
3. Select an ECE faculty member to be your major professor/advisor and also to be the Chair of your Master's Advisory Committee. Confer with the major professor for advice on the plan and obtain his/her informal agreement to the plan (no signature is required on the draft copy).
4. In consultation with your major professor, select two additional faculty members to serve on your graduate advisory committee.
5. Prepare a computer-generated or typed version of your plan of study from the draft copy. Sign the form and carry it to each of your advisory committee member for signature.
6. Submit the original copy with all necessary signatures to the Graduate Programs Office after making a copy for your records.

Your plan of study will be reviewed by the Graduate Programs Coordinator and the ECE Graduate Office to ensure that the plan meets all requirements, and be kept into your file. Before the last semester in your degree program, it will be submitted to the Purdue Graduate School for final approval, which usually takes at least 3 to 4 weeks. You will consult the items relevant to the plan of study are described below:

1. There are eight degree options and their corresponding degree codes are listed in the following:

Dept Code	Degree Code	Option	Degree Title
E25	51	Non-Thesis	Master of Science in Electrical and Computer Engineering
E25	52	Thesis	Master of Science in Electrical and Computer Engineering
E25	53	Non-Thesis	Master of Science in Engineering
E25	54	Thesis	Master of Science in Engineering
E33	21	Non-Thesis	Master of Science
E33	22	Thesis	Master of Science

2. The space for indicating the research area is left blank in most cases.
3. Indicate the primary area for your plan of study in the first entry line under courses, as shown in the sample plan of study of Figure F.
4. The title of a topic course (e.g. ECE 595) must start with "TPCS" followed by the title.
5. Courses transferred from other schools should be listed on the plan of study with the same course numbers and titles as they appear on the transcript from the school at which they were taken. Do not use the equivalent course number from a Purdue course. One copy of the catalog description of each course transferred should be submitted together with the plan of study.
6. The column labeled "Regular Regis." ("RR") is used to indicate whether a course was (or is to be) taken at IUPUI; the column "TR" indicates courses transferred from another school.
7. The column labeled "Non-Degree Regis." is used to indicate courses that were (or are to be) taken while a student was in non-degree status and not officially admitted to a degree program. No more than 12 credit hours taken in non-degree status may be used on a Master's POS.
8. To use a course that is an undergraduate excess on the POS, the course must be declared undergraduate excess on the transcript or, a letter from the school at which the course was taken must be supplied to verify that it was not used as a part of any degree.
9. ECE 698 M.S. Research Thesis should not be listed on the plan of study.

[6] http://www.engr.iupui.edu/ece/graduate.shtml?menu=grad

Sample Master's Plan of Study

Graduate School Form 6
(Revised 6/06)

PURDUE UNIVERSITY
GRADUATE SCHOOL
Request for Master's Degree Advisory Committee and Plan of Study Approval
(Please read instructions on reverse side.)

(Please type)

Pg. _____ of _____ Pgs. Date Degree Expected Dec. 2007

1. NAME OF STUDENT **Martin King** PUID No. **1234567890**

2. DEPARTMENT **Electrical and Computer Engineering** Dept. Code **E25** ☐ Thesis Option ☒ Nonthesis Option

Degree Title **Master Science in Electrical and Computer Engineering** Degree Code **49** Research Area

3. AREA OF SPECIALIZATION (if any) AOS Code

Area	4. COURSES				5. METHOD OF ESTABLISHING CREDIT			6. DATE COMPLETED OR TO BE COMPLETED
	OFFICIAL TITLE ABBREVIATION *Please group courses into "Primary" (P) & "Related" (R) areas.*	Subject Abbr.	Course No.*	Cr. Hours	Regular Regis.	Non-degree Regis.	Other or Transfer From +	
	Computer Engineering – Primay Area							
P	**Comp. Models and Methods**	**ECE**	**608**	**3**	**RR**			**12/2006**
P	**Artificial Intelligence**	**ECE**	**668**	**3**	**RR**			**12/2006**
P	**Intro to Computer Communication**	**ECE**	**547**	**3**	**RR**			**12/2006**
P	**TPCS: Real-Time Operating Systems and**	**ECE**	**595**	**3**	**RR**			**5/2007**
R	**Random Variables and Signals**	**ECE**	**600**	**3**	**RR**			**5/2007**
P	**TPCS: Mobile Wireless Networks**	**ECE**	**695**	**3**	**RR**			**5/2007**
R	**Intro. to Mathematical Statistics**	**STAT**	**528**	**3**	**RR**			**8/2007**
R	**TPCS: Digital Description w/ VHDL**	**ECE**	**595**	**3**	**RR**			**12/2007**
R	**TPCS: DSP Processors**	**ECE**	**595**	**3**	**RR**			**12/2007**
R	**TPCS: Medical Image Processing**	**ECE**	**695**	**3**	**RR**			**12/2007**

7. LANGUAGE REQUIREMENTS	Method to be used to meet language requirements
a.	a.
b.	b.

\+ Transfer course must be described as on original transcript.
* Mark course number with asterisk (*) if B or better is required.

8. NAMES OF ADVISORY COMMITTEE MEMBERS (Please type full name.)	9. GRADUATE FACULTY IDENTIFIER	APPROVED BY ADVISORY COMMITTEE MEMBERS (Signature)	10. DEPARTMENT Abbr.	10. DEPARTMENT Code	11. ADVISOR IN AREA OF:
Steve Wonder Chair	**X0123**	Chair			
Susan Noel	**X0231**				
Michael Jordan	**X0312**				

☐ Check here if supplemental notes or other requirements are attached.

13. APPROVED BY:

Head of the Graduate Program Date

12. SIGNATURE OF STUDENT Date

Academic Dean (if required) Date

Graduate School Dean

G Graduate Courses for the Primary Area

The list below was revised on August 2011. An up-to-date graduate course list is available on the ECE Graduate website. Note the following abbreviation for primary areas: Automatic Control, Robotics and System (AC); Communication and Signal Processing (CS); Computer Engineering (CE); and VLSI and Circuit Design (VC).

Course Number/Title	AC	CS	CE	VC	Semester Offered [7]
ECE 510 Introduction to Biometrics		V	V		Spring
ECE 515 Software Engineering for Embedded Systems			V		Fall
ECE 532 Computational Methods for Power System Analysis	V				Unavailable
ECE 536 Introduction to Computational Intelligence	V		V		Fall
ECE 537 Multimedia Applications		V			Unavailable
ECE 538 Digital Signal Processing I		V			Spring
ECE 544 Introduction to Digital Communications		V			Spring even years
ECE 547 Introduction to Computer Communication Networks		V	V		Fall
ECE 554 Electronic Instrumentation and Control Circuits				V	Infrequent
ECE 559 MOS VLSI Design				V	Spring even yrs.
ECE 565 Computer Architecture			V		Spring
ECE 569 Introduction to Robotics	V				Unavailable
ECE 573 Optimizing Compilers			V		Infrequent
ECE 580 Optimization Methods for Systems and Control	V				Fall
ECE 595 Automotive Control	V				Fall
ECE 595 Computer Relaying for Power Systems	V				Unavailable
ECE 595 Computer Security		V	V		Fall odd yrs.
ECE 595 DSP Processors		V			Unavailable
ECE 595 Foundations of Adv. Eng. I		V	V		Summer
ECE 595 Integrated Nanosytem Processes & Device				V	Spring
ECE 595 Intro. to 2D & 3D Image Proc.		V			Spring
ECE 595 Intro. to Discrete Event Dynamic Sys.	V				Spring
ECE 595 Nanosytem Principles				V	Fall
ECE 595 Multimedia & Mobile Computing		V	V		Unavailable
ECE 595 Real-Time Operating Systems and Applications			V		Fall
ECE 600 Random Variables and Signals		V			Fall
ECE 602 Lumped System Theory	V				Fall
ECE 604 Electro Magnetic Field Theory				V	Infrequent
ECE 606 Solid-State Devices				V	Infrequent
ECE 608 Computational Models and Methods			V	V	Spring
ECE 610 Energy Conversion	V				Infrequent
ECE 627 Cryptography & Intro. to Secure Comm.		V	V		Fall even yrs.
ECE 637 Digital Image Processing I		V			Spring even yrs.
ECE 647 Advanced Topics in Communication Networks		V	V		Infrequent
ECE 648 Wavelet, Time-Frequency, and Multirate Signal Processing		V			Unavailable
ECE 662 Pattern Recognition and Decision-Making Processes	V	V			Fall
ECE 680 Modern Automatic Control	V				Spring
ECE 684 Linear Multivariable Control	V				Spring
ECE 685 Introduction to Robust Control	V				Unavailable
ECE 695 Mobile Wireless Networks		V	V		Spring
ECE 695 Medical Image Analysis		V			Spring odd yrs

Unavailable= courses are offered, but at the time this document was contructed, the tentative offering schedule could not be determined. Consult with your adviser and/or the Schedule of Classes.
Infrequent= courses are offered irregularly

Note: The above table represenst a taentaive frequncy of courses offered. Studnets should rely on the current schedule of classes for courses offered in a given semester and should communicate with their adviswers about potetial chenges in future years.

H Final Oral Examination (Thesis Defense)

This appendix describes the procedure for scheduling and completing the final oral examination (defense). *The final exam must be scheduled and announced at least three weeks before the examination date by filing the Graduate School Form 8*. Consult the following procedure for preparing the thesis and final oral examination:

1. Pick up a copy of the "Graduate School Manual for the Preparation of Graduate Theses" from the Graduate Programs Office. The thesis manual provides specific instructions on organizing, formatting, and binding the thesis.
2. Before proceeding to write your thesis, you are strongly advised to consult with your major professor to review your plans for preparing and presenting the thesis. Check with your professor if your research thesis needs to be kept confidential. If confidentiality is required for your thesis, a request for confidentiality needs to be submitted to the Purdue Graduate School by completing Graduate School Form 15 "Request for Confidentiality of Thesis." Form 15 can be obtained from the ECE Graduate website.
3. At least two to three weeks prior to the oral examination, provide a draft copy of your thesis to each member of the examining committee (advisory committee) for review.
4. Necessary forms and final oral exam must be completed by their deadlines. Be sure to have a copy of the "Graduation Deadlines" for the semester you intend to graduate. A copy of the Graduation Deadlines can be obtained from the Graduate Programs Office or the ECE Graduate website.
5. On the day of the final exam, you must have the following two forms prepared and ready to be signed by your advisory committee members:
   - Graduate School Form 7 "Report of Master's Examining Committee", and
   - Graduate School Form 9 "Thesis Acceptance."

   Immediately after your oral exam, Form 7 must be signed and returned by your major professor to the Graduate Programs Office. Keep Form 9 until you have made all necessary revisions to your thesis requested by your advisory committee.
6. The final copy of your thesis to be deposited needs to comply with the format requirements of the Purdue Graduate School. The thesis must be checked for proper formatting and approved by the Graduate Programs Coordinator before it is deposited. Allow sufficient time to make any changes necessary to ensure that the thesis is in compliance with format requirements.
7. Obtain all necessary signatures on the Thesis Acceptance form and include the original form on the front of the thesis to be bound.
8. Finally, deposit thesis at the School's Graduate Programs Office and upload your thesis to Purdue Graduate School.