

THE DEPARTMENT OF ELECTRICAL
AND COMPUTER ENGINEERING

GRADUATE STUDENT MANUAL

Policies and Procedures
2020-2021



UCR ECE
We Engineer Excellence



Marlan and Rosemary Bourns
College of Engineering

Table of Contents

A. Policies	4
1. Full-time Enrollment	4
2. Standards of Scholarship	5
3. Time Limits	5
4. Deadlines	6
5. Transferring and Waiving Credit	6
6. Course Numbering	6
7. Grading	7
8. Academic Integrity Policies	7
B. Procedures	7
1. Forms and Petitions	7
2. Enrollment	8
3. Email	9
4. Leave of Absence	9
5. Filing Fee	10
C. Requirements	11
1. Coursework Requirements	11
2. Colloquia and Professional Development Requirement	11
3. Course Plan	12
4. Faculty Advisor	12
5. Annual Student Evaluation	12
6. Signature Approval Page for Ph.D. and M.S. Plan I (Thesis)	13
7. Nonresident tuition	13
III. Master of Science (M.S.) Degree Program	13
A. Overview	13
B. Coursework requirements	13
C. Advancement to Candidacy	14
D. Degree Completion	14
E. Plan I: Thesis	15
1. Timeline	15
2. Thesis and Committee Requirements	15
F. Plan II: Comprehensive Exam (Non-Thesis)	16
1. Timeline	16
2. Comprehensive Exam Requirement	17
3. Comprehensive Exam Course Subjects	18
IV. Doctor of Philosophy (Ph.D.) Degree Program	20
A. Coursework Requirements	20
B. Timeline	20
C. English Proficiency Exam (Versant Test)	21
D. Preliminary Exam Requirement	21
E. Preliminary Exam Course Subjects	22
F. Oral Qualifying Exam and Committee	24
1. Presentation and Written Report	24

2.	<i>Committee</i>	25
3.	<i>Change of Committee</i>	25
G.	Advancement to Candidacy	26
H.	Degree Completion	27
1.	<i>Dissertation and defense</i>	27
2.	<i>Dissertation committee</i>	27
3.	<i>Filing</i>	28
I.	M.S. on the way to a Ph.D. Degree	28
V.	Financial Assistance	29
A.	Fellowships	29
B.	Employment	29
1.	<i>Teaching Assistants (TA)</i>	29
2.	<i>Graduate Student Researcher (GSR)</i>	31
C.	Salary and Stipend Disbursement	31
VI.	Miscellaneous Information	31
A.	Contacts	31
1.	<i>Key personnel and points of contact</i>	31
2.	<i>ECE Department Staff</i>	32
B.	Safety	32
C.	Machine Shop	32
D.	Computers	32
E.	Academic Appeals	32
F.	ECE Department Administration	32
1.	<i>Facility Access and Keys</i>	33
2.	<i>Mail</i>	33
3.	<i>Photocopying</i>	33
4.	<i>University Letterhead</i>	34
5.	<i>Lost Property</i>	34
VII.	Resources	34

I. Introduction

The Department of Electrical & Computer Engineering (ECE) at the University of California, Riverside (UCR) offers advanced study and research in specialized areas of Electrical Engineering (EE). Two degree programs are currently offered: the Master of Science (M.S.) in EE, and the Doctor of Philosophy (Ph.D.) in EE. The information contained in this manual is intended for graduate students in these two programs.

It is strongly recommended that EE graduate students familiarize themselves with the information in this document. Note that the Department reserves the right to modify the program requirements and policies. Changes do occur regularly, but they are generally not retroactive. Therefore, it is crucial that students refer to the Graduate Manual from the academic year of their admission to the program. In addition to the EE-program-specific policies described here, the UCR Graduate Division determines the general regulations and policies that apply to all graduate programs at UCR. Information about these can be found at the following sources:

- Graduate Division Website: <http://graduate.ucr.edu>
- UCR General Catalog: <https://registrar.ucr.edu/registering/catalog>
- Summary of changes related to COVID-19: <https://graduate.ucr.edu/campus-closure>
 - UCR Campus Return: <https://campusreturn.ucr.edu/>
 - Campus Updates: <https://ehs.ucr.edu/coronavirus>

The Department may specify more rigorous requirements for the degree than listed in these other sources. Therefore, **when there appears to be a conflict in requirements for the degree, the more rigorous requirements must be satisfied.**

II. General Graduate Program Information

Graduate students in both the M.S. and Ph.D. programs are required to meet a number of requirements set by the ECE Department and UCR Graduate Division. This section describes key policies, procedures, and requirements, but please keep in mind that this list may not be comprehensive. Please refer to the Graduate Division's website for additional information, as well as to the respective sections for the requirements specific to the M.S. and Ph.D. programs.

A. Policies

1. *Full-time Enrollment*

During regular academic quarters (Fall, Winter, Spring) all graduate students are expected to carry a full academic course load unless this is pre-approved by the department (approved on their BS+MS course plan, on an approved leave, or on Filing Fee Status). Summer is not a regular academic quarter and does not generally require enrollment. Graduate students are considered to be full-time if they are carrying at least 12 graduate units. Details are found in the UCR General Catalog and the Graduate Division policies here: https://graduate.ucr.edu/regulations-and-procedures#_continuous_registration.

International students: Federal regulations governing student visa status require full-time attendance for most international students. Exceptions can only be made by petition through the International Students Office (<https://international.ucr.edu/students>).

2. *Standards of Scholarship*

The following is an overview of the minimum standards of scholarship. Details of the campus policy are on the Office of Graduate Division website at <https://graduate.ucr.edu/regulations-and-procedures#acceptable>

All students must demonstrate acceptable progress toward their degree objectives and maintain a satisfactory grade point average. Satisfactory progress is determined on the basis of both the recent academic record and overall performance.

- Normally graduate students are expected to enroll for at least twelve units (unless otherwise approved on their BS+MS course plan, on an approved leave, or on Filing Fee Status) and satisfy all requirements of the academic program according to an approved schedule.
- A graduate student who has not demonstrated satisfactory progress is not eligible for any academic appointment, such as Reader, Graduate Student Researcher, or Teaching Assistant, and may not hold a fellowship or other award that is based upon academic merit.
- Unsatisfactory academic progress may be determined on the basis of explicit requirements, but the professional judgment of the faculty upon review of all graduate work undertaken by the student is paramount.
- The intention of notices of unsatisfactory progress is to provide students with a period of time (usually at least one quarter) in which to make the necessary improvement in their academic status, and to make progress on successfully completing their graduate study.

Students are considered to be making unacceptable progress and become subject to dismissal when **any of the following** happens:

- The overall GPA falls below 3.00
- The quarterly GPA falls below 3.00 for two successive quarters
- Failure to fulfill program requirements, such as required courses, exams, research, or progress toward the thesis/dissertation in a timely and satisfactory manner
- Failure to pass comprehensive or qualifying examinations in two attempts
- Ph.D. students have not found a Faculty Advisor by the start of the third quarter of their studies
- Failure to complete their program within one year after reaching normative time
- Failure to make progress in research for two consecutive quarters
- Twelve or more units of "I" grades outstanding

3. *Time Limits*

The M.S. Program in EE requires one year of academic residence. Normative (i.e., typical) time is 2 years. The Ph.D. Program requires at least 2 years of academic residence, with a normative time of 3.5 years for students holding an M.S. degree in EE and 5 years for other students. The maximum time limit for either degree is one year beyond the normative time, excluding approved leaves of absence.

4. *Deadlines*

It is the responsibility of the student to meet all deadlines specified by the ECE Department and the Graduate Division. Students should consult the Graduate Student Handbook of the Graduate Division and the quarterly UCR Class Schedule for deadline information.

5. *Transferring and Waiving Credit*

M.S. students: You may request to transfer up to 8 units from a previous graduate program if these units were not counted toward a degree. Units from another University of California campus graduate program may be used to satisfy one of the three quarters of the residence requirement and may be counted for up to one-half of the total units required for the M.S. degree. A maximum of 8 quarter units from institutions outside the University of California may be counted toward the M.S. degree at UCR. These requests are considered on a case-by-case basis.

Ph.D. students: Students who have already taken 36 units of graduate coursework at UCR as part of the M.S. program in Electrical Engineering or Computer Engineering are deemed to have met the minimum unit requirement for the Ph.D. program. Students who are admitted with an M.S. degree from a different institution may use up to 8 units of equivalent courses taken during their M.S. study to count towards the requirement. Ph.D. students cannot waive preliminary exam subjects based on “A” grades received at another institution.

ECE Department and Graduate Division approval must be obtained before any transfer units can be accepted for credit.

All transfer work must have been completed in graduate standing with a minimum grade of "B." Unit credit only is posted on the UCR transcript (grade points are not transferred). Courses must be equivalent to those offered at UCR.

For additional information regarding Credit Transfer policies, including courses taken as an undergraduate at UCR and at UCR Extension, please refer to

<https://graduate.ucr.edu/regulations-and-procedures#transfer>

6. *Course Numbering*

Graduate courses are numbered 200+ and undergraduate courses are numbered 199 and lower.

Informal Courses (290, 297, 299)

In addition to the “formal” courses given on a regular basis, faculty can offer *Informal Courses*. These courses are:

EE 290 Directed Studies	If you plan to study a particular subject under the direction of a faculty member and a regular course in that subject is not offered, you may enroll in EE 290. Students are required to file a petition no later than the first day of class to enroll in EE 290 to be able to use the units earned toward degree requirements.
-------------------------	---

EE 297 Non-thesis Research	If you are doing research under the advisement of a faculty and this research is not directed toward your thesis or dissertation, you may enroll in EE 297.
EE 299 Research for Thesis or Dissertation	If you are doing research under the supervision of your Faculty Advisor and this research is directed toward your thesis or dissertation, you may enroll in EE 299.

EE 290 Directed Studies courses require a narrative description on a request form and should be approved and signed by the instructor and Graduate Advisor.

7. *Grading*

For a graduate student only the grades A+, A, A-, B+, B, B-, C+, C, C- and S represent satisfactory scholarship and are applied toward degree requirements.

Individual study, individual research, or other individual graduate work is normally evaluated by the grades Satisfactory/No Credit and only the grade S is credited towards degree requirements. Graduate students are not permitted to take courses on an S/NC basis unless the course is not required for the degree (i.e. it is purely an elective course) or the catalog states it is only offered on an S/NC basis. Undergraduate courses that do not have any significant relationship to the graduate program are considered electives. These courses may be taken S/NC with the approval of the Graduate Dean and do not count towards the student's degree requirements.

The grade Incomplete (I) is given only when a student's work is satisfactory but is incomplete because of circumstances beyond his or her control and the student has been excused in advance from completing the quarter's work. Although incomplete grades do not affect the student's GPA, they are an important factor in evaluating academic progress. **A student with 12 units of "I" grades is deemed to be making unacceptable progress. Students may not be employed as TA's, GSR's, or Teaching Fellows if they have more than 7 units of "I" grades.**

The incomplete portion of the work needed to earn a grade must be received by the instructor no later than the last day of the quarter following the assignment of the "I". If not made up within the time allowed, the "I" lapses to an F ("Fail") or NC. An advanced degree cannot be awarded if there is an Incomplete on the student's record.

8. *Academic Integrity Policies*

All students should become familiar with and follow UCR's Academic Integrity Policies, described at <https://graduate.ucr.edu/regulations-and-procedures#acceptable>. In case of any suspected Academic Misconduct, the University's procedures described in the above link will be followed.

B. **Procedures**

1. *Forms and Petitions*

Each student is responsible to plan ahead and submit forms and petitions well in advance of the deadlines. **Students must allow a minimum of two weeks before expecting petitions to be processed by the department and up to one month for petitions to be processed by the Graduate Division.** Graduate Division emails the results of their petitions directly to the student.

If your form requires a Graduate Advisor signature, we ask that you please **leave the Graduate Advisor's signature blank** and submit the form to the **Graduate Program Coordinator**. Students should *not* send the forms directly to the Graduate Advisor. Students should obtain the signature of their faculty (research) advisor if they have one.

- Grad Division forms are available at http://graduate.ucr.edu/pub_forms.html. Many petitions are submitted online via the R'Grad icon in the R'Web menu.
- Department forms are available online here: <https://www.ee.ucr.edu/academics/resources>

If you have any questions about your forms, please contact your Graduate Program Coordinator. Please do not contact the Grad Advisor directly about your forms. To help save both students and the Grad Advisor time, our office reviews forms first before the Grad Advisor reviews forms in batch.

Enrollment

Please take a moment to read the helpful procedures below for enrolling. Remember, this is a general guide, but is not intended to be comprehensive. Each student is individually responsible to meet deadlines and ensure they are enrolled in a **minimum of 12 units** every academic quarter (fall, winter, spring). Students can enroll in courses and check their study list on R'Web prior to the deadlines as outlined here: <https://registrar.ucr.edu/calendar>.

Generally, you should be able to self-enroll in R'Web during your open enrollment. Some courses have enrollment restrictions. Here are some common reasons you may encounter an error enrolling in R'Web:

- You have not taken the formal pre-requisite course at UCR. Generally, the first step is to email the course instructor to request permission to enroll.
- The course is impacted or has high-demand from students who need the course in order to complete their degree on-time. Undergraduate courses and some CS grad courses may have these restrictions. Students who plan ahead, list these courses on their course plan in advance, and follow the procedures in a timely manner have the best chance of being enrolled in impacted courses.

If you encounter one of the errors described above or are otherwise unable to enroll yourself in R'Web follow the applicable procedure below:

Undergraduate Engineering Course Enrollment Process (numbered 199 or lower)

To request enrollment in an undergraduate, engineering course, please complete the BCOE Enrollment Assistance Form (EAF) online here: <http://student.engr.ucr.edu/enrollmentassistance.html>.

To request enrollment in a course outside of engineering, please directly contact the program or enrollment center offering the course.

Graduate Enrollment Process (numbered 200 or above)

Make sure the course is on your pre-approved course plan. Email the department offering the course with all this information:

- Forward permission from the instructor to the program offering the course
- Student full name

- Student ID # (SID)
- The Department and course number requested (e.g. EE 255)

These are program contacts for Graduate Course enrollment:

- Electrical Engineering – Kim Underhill, kim@ece.ucr.edu
- Bioengineering - Kellie McDonald, kellie.mcdonald@ucr.edu
- Chemistry – Christina Youhas, christina.youhas@ucr.edu
- Computer Science & Engr – Kim Underhill, kim@ece.ucr.edu
- Materials Science & Engr – Kellie McDonald, kellie.mcdonald@ucr.edu
- Mechanical Engr – Paul Talavera, paul@engr.ucr.edu
- Physics – Derek Beving, derek.beving@ucr.edu

2. *Email*

ECE Email Account

Every ECE graduate student is responsible for setting up an ECE email account by following the instructions here: <https://systems.engr.ucr.edu>.

Direct any questions or issues about your ECE email account to the ECE Systems Administrator at Systems@ece.ucr.edu.

Check Email Daily

Each student is individually responsible to check and read their emails daily. This is the primary form of communication used by the department and the campus. Not having your ECE email account set up or not reading an email is not an excuse for missing critical information or deadlines.

Email Courtesy

Please **allow at least 2 business days before expecting a response to emails**. Please do not resend the same question within less than three business days. If you feel your email requires immediate attention, you may write “urgent” in the subject line. If you plan to email the same question to multiple parties, send one email and CC all addressees. **Include your full name and your student identification number (SID) on all your emails to staff.**

3. *Leave of Absence*

A graduate student is expected to enroll for each regular academic session unless a formal Leave of Absence is granted. A Leave of up to one year's duration may be granted if it has been determined that the Leave is consistent with the student's academic objective. This must be approved by both the department and the Graduate Dean.

Graduate students granted a Leave of Absence forfeit the use of University facilities and faculty time. Students who will be absent from the campus while continuing to pursue graduate research or scholarly activity should register (in absentia if outside the State of California). Students who must leave the academic program for more than three quarters normally should withdraw and apply for readmission at the time they expect to resume graduate study at UCR.

A Leave ordinarily may be granted when a student is to be away from the University of California for one of the following reasons:

- Serious illness or temporary disability
- An occupation not directly related to the student's academic program
- Family responsibilities

Generally, Leaves of Absence are limited to a total of three regular academic quarters and may be granted retroactively, after the start of a quarter, under exceptional circumstances. A Leave may not be granted if a student has not completed at least one quarter's work, or has not demonstrated satisfactory academic progress. A student who has more than eight units of "I" outstanding on their transcript is considered to be making unsatisfactory progress.

While on a Leave of Absence, a student is not eligible for University fellowship support, University research grants, or financial aid. A graduate student on Leave may not usually work on campus and may not hold an appointment as a Graduate Student Researcher, Teaching Assistant, or similar academic employment which requires full-time registration as a graduate student.

Students on Leave are not automatically enrolled in the University's Health Insurance Program (GSHIP). Students who enrolled in GSHIP the previous quarter, are eligible to enroll in the GSHIP on a voluntary basis for a maximum of two consecutive quarters. For more information or assistance, please call the Student Health Insurance Office at 951-827-5683.

The immigration status of foreign students might be affected by a Leave depending on circumstances and whether they are staying in the U.S., or returning to their own country. It is imperative that foreign students considering a Leave of Absence seek counseling at the International Students and Scholars Office. The student is also required to secure approval from the International Students and Scholars Office (if foreign) before a final decision can be made.

The Leave of Absence petition does **not** route to the Financial Aid office. Students receiving student loans should contact the Financial Aid office directly to determine if adjustments will be made to their loan based on the date the Leave petition was received by the Graduate Division. The petition must be into the Graduate Division by the published deadline dates.

Students should file a Leave of Absence form online in R'Grad. The petition must be approved by the Graduate Advisor and a memo of justification from the department must be submitted with the petition. Students should not expect an answer until two weeks after their petition has been submitted.

4. Filing Fee

Students who have completed all degree requirements except for defending and filing the dissertation/thesis (for Ph.D. or Plan I M.S. students) or completing the Comprehensive Exam (for Plan II M.S. students) may want to consider the option of a filing fee in the final term instead of paying full registration fees. Filing fee is optional (not required) for eligible students.

Filing fee forms are found in R'Grad. M.S. students must also file an application for candidacy in R'Grad to be eligible for the filing fee. Students on filing fee pay only one-half of the Student Services Fee (around \$188). Health insurance (GSHIP) is not covered during the filing term. Students who plan to go

on Filing Fee should contact the Student Health Insurance Office 951-827-5683 if they wish to purchase the campus medical insurance.

Only one quarter on filing fee status is allowed. Students who do not complete their degree during the filing fee must register and pay full fees for the following quarter. The only exception is if a student fails the master's comprehensive exam. Then a retake of the exam on Filing Fee Status is allowed.

Graduate Division Filing Fee Deadlines

- Fall Quarter: September 1st
- Winter Quarter: December 1st
- Spring Quarter: March 1st

Unless payment of a Filing Fee or a Leave of Absence is approved, all graduate students must register and pay fees each regular academic quarter (excluding Summer Session) until all degree requirements are completed. Otherwise, student status and candidacy status will normally lapse.

For more information on the Filing Fee, please refer to <https://graduate.ucr.edu/graduation-procedures>

C. Requirements

1. Coursework Requirements

Both the M.S. and the Ph.D. students are required to complete 36 units of approved courses. If a course is offered by EE and a course with significant overlap is offered by another department, students will not receive credit for both courses and are highly encouraged to enroll in the EE course:

- EE 230 has significant overlap with CS 210. Students should enroll in EE 230.
- EE 240 has significant overlap with CS 229. Students should enroll in EE 240.

Please refer to sections III and IV for details on which courses may or may not be counted towards the unit requirements.

For a graduate student, only the grades A+, A, A-, B+, B, B-, C+, C, C- and S represent satisfactory scholarship and may be applied toward degree requirements.

2. Colloquia and Professional Development Requirement

All graduate students are required to satisfactorily complete three quarters of the EE 259 Colloquium in Electrical Engineering course in each of their first three quarters of study. Colloquia announcements will be posted on Department bulletin boards, on the ECE website, and via email. It is the student's responsibility to watch for the announcements and attend all Department colloquia. If a course/TA assignment conflicts with a seminar, a student must notify the Graduate Program Coordinator prior to the start of the seminar. Only two unexcused absences are allowed per quarter. **EE 259 units cannot be counted towards the minimum-unit requirements.**

Students are expected to work towards developing their professional skills (including presentation and technical writing skills) during their graduate studies. To aid in this goal and meet the program's professional development requirement, students are required to satisfactorily complete three quarters of EE 259.

3. *Course Plan*

To ensure that new graduate students have a concrete and appropriate plan for selecting courses and preparing for the Preliminary/Comprehensive exam, all incoming graduate students are required to submit a plan of the courses they intend to take until their Advancement to Candidacy. The course plan should be designed in coordination with each student's Faculty Advisor. M.S. students without a faculty advisor should follow one of the approved course plans in consultation with the Advisor to M.S. students. Approval from either the Faculty Advisor (or Advisor to M.S. students) and the ECE Graduate Advisor is required. Changes to the course plan at a later date are possible by submitting a new course plan for review and approval by the Graduate Advisor.

4. *Faculty Advisor*

Selecting a faculty advisor

All graduate students must select a Faculty Advisor, who provides mentorship and guidance on research matters and/or course selection. Upon admission to the EE graduate program, new students are assigned a preliminary Faculty Advisor (e.g., the Graduate Advisor) to assist with course selection and general curriculum guidance. For M.S. students on the Exam Plan (Plan II), this initial choice is typically sufficient. **Unadvised Ph.D. students and M.S. students on the Thesis Plan should select a Faculty Advisor whose research interests are aligned with their own, as soon as possible by filing a New Change of Faculty Research Advisor form online here: <https://www.ee.ucr.edu/academics/resources>.** Ph.D. students who were assigned an advisor upon admission are not required to submit this form. Ideally, each student should identify an advisor within the first quarter of study. Ph.D. students with a UCR Fellowship, who were sponsored for admission by a specific faculty member, are expected to begin participating in research activities under the sponsoring Professor's direction upon arrival to UCR.

Ph.D. students who have not found a Faculty Advisor by the start of the third quarter of their studies at UCR are considered to be making unacceptable progress towards their degree.

The Faculty Advisor must be consulted in the planning of programs of study, research directions, and forming of committee(s). Especially for Ph.D. students and M.S. students working towards a Thesis, finding an Advisor that is a good match in terms of research objectives and personal communication style is crucial. Students and advisors should make every effort to maintain good working relationships.

Changing Faculty Advisor

Graduate students are encouraged to discuss with the Graduate Advisor prior to changing faculty advisors. To change advisors, students should file a Change of Faculty Advisor form found online here: <https://www.ee.ucr.edu/academics/resources>. The form needs to be signed by both the Current Faculty Advisor and the New Faculty Advisor.

5. *Annual Student Evaluation*

An overall written evaluation of each student's academic progress is performed by the student's Faculty Advisor, in consultation with the student, at the end of each academic year. This evaluation includes a brief review of the student's work and sets academic objectives for the next period. The Graduate Advisor, the Graduate Division, and the student receive copies of this report.

6. *Signature Approval Page for Ph.D. and M.S. Plan I (Thesis)*

The Signature Approval Page is required for the M.S. Thesis and for the Ph.D. Dissertation Defense (not for the M.S. Plan II option) as explained in the Signing Regulations section online here: <https://graduate.ucr.edu/campus-closure>. See the respective sections below for more details about the defense requirements.

7. *Nonresident tuition*

Domestic Nonresidents Establish CA Residency

Eligible domestic students (not international students) who are nonresidents of California need to establish CA residency for tuition purposes prior to the start of their fourth quarter. Students who do not establish CA residency in time may be personally responsible to pay the \$5,034 quarterly nonresident tuition. You can find helpful information about establishing residency here: <https://registrar.ucr.edu/tuition-fees/residency-for-tuition>

If you have any questions about establishing CA residency for tuition purposes, please contact:
Dominic Laureano, Residency and Fee Coordinator
2249 Student Services Building
reshelp@ucr.edu

No other university personnel is authorized to supply information connected to residency for tuition and fee purposes.

International Ph.D. Students - Nonresident Tuition

International Ph.D. students may be held personally responsible to pay the nonresident tuition of \$5,034 per quarter if they are not within the normative time frames for advancement to candidacy and/or degree completion.

III. Master of Science (M.S.) Degree Program

A. Overview

Students in the M.S. degree obtain mastery of an area of Electrical Engineering through coursework and optionally through the completion of a Master's Thesis. Students in the M.S. program must choose one of the following two plans for degree completion:

Plan I (Thesis plan)	Requires completion of 36 units of coursework, and writing a Master's Thesis that reports an original investigation of a defined problem.
Plan II (Exam plan)	Requires completion of 36 units of coursework and passing a Comprehensive Exam.

In what follows, additional details about the requirements and milestones of the M.S. Program are provided.

B. Coursework requirements

Successful completion of graduate coursework is a key component of the M.S. Program. Students should come up with a course plan that suits their focus area of interest, in consultation with their Faculty Advisor and/or the M.S. Graduate Advisor. The M.S. Program requires completion of a **minimum of 36 units of approved coursework in EE and related areas. At least 24 of these units must be in graduate-level courses numbered between 200 and 279. Colloquium units and courses numbered 291 and higher are not counted towards the 36 unit requirement.**

Students on the Thesis plan I must complete an additional 12 units of EE 297/299 units. Students on the Exam plan II may not have 297/299 course work counted toward their required units for their degree and may not enroll in 299 units. Students on the Exam plan II may use up to 8 units in Directed studies (290) and upper-division undergraduate EE courses numbered 115 and above with the exception of EE 116, 120, and 132.

Note that all the unit requirements listed above are **minimum requirements**. Students may choose to enroll to a higher number of courses than what is needed to meet the minimum limits or may need to take courses to cover prior deficiencies. These courses will be listed normally in the students' transcripts but will not be used towards satisfying the degree requirements.

Remedial courses, such as those required as prerequisites to the core EE graduate classes, will not be allowed to count toward the degree requirements.

Coursework must be approved by the Graduate Advisor by submitting a course plan.

C. Advancement to Candidacy

Students must be advanced to candidacy for M.S. degree no later than the first week of the quarter in which their degree is expected to be awarded. Deadlines for submission are published each quarter in the Schedule of Classes and in the annual Graduate Division Calendar. If the application is not received by the deadline date, the degree may be deferred until the following quarter. If the Master's degree requires a thesis (Plan I), a thesis committee should be nominated at the time the student files for advancement to candidacy (see section III).

The Master's degree is conferred at the end of the academic quarter in which all requirements have been satisfied (the official conferral day is the last day of the quarter). The students must have been formally advanced to candidacy during the quarter in which they finish their degree.

D. Degree Completion

By the first day of instruction of the planned degree completion (graduation) quarter, all M.S. students must file the Application for M.S. Candidacy form on R'Grad.

Important: Students must apply to graduate on R'Web by Monday of Week 4 of the planned degree completion term. Students who fail to submit the application to graduate will not graduate.

Every student is individually responsible for the Graduation Procedures and Deadlines information here: <http://graduate.ucr.edu/graduation.html>.

Additional requirements for degree completion of the Plan I and Plan II M.S. options are in the sections below.

E. Plan I: Thesis

1. Timeline

The following tables summarize the key milestones of the M.S. Plan I (thesis) plan.

Timeline of M.S. Plan I (Thesis Plan)	
Submit a course plan, drafted in consultation with Faculty Advisor and/or M.S. Graduate Program Advisor	Start of program
Find a Faculty Advisor	As soon as possible
Take classes and work on thesis	Normally between one and two years
Submit Advancement to Candidacy form	First week of desired quarter of graduation
Submit application to graduate through R'Web	By Mon. of 4 th week of graduation quarter
Present M.S. Thesis and submit approved Thesis to Graduate Division	Quarter of graduation

2. Thesis and Committee Requirements

Master's students that choose the Thesis Plan (Plan I) are required to write and present a Master's thesis as part of the degree requirements. A student planning to write an M.S. thesis should find a Faculty Advisor as soon as possible, preferably within the first quarter of study. The Faculty Advisor will work together with the student to define a problem that the thesis will study and provide guidance to the student.

Thesis Defense

Once the thesis is completed, the student must present it to an M.S. thesis committee in a seminar presentation open to the public. The M.S. thesis committee consists of three members, and all three members must approve the thesis and sign the title page upon approval. Students should carefully review the Dissertation/Thesis Filing Checklist for information regarding filing the dissertation/thesis and graduation requirements: <http://graduate.ucr.edu/dissertation.html>.

Immediately after the defense, the student or the Committee Chairperson must initiate the **Final Defense Approval form** as explained here: https://graduate.ucr.edu/dissertation-and-thesis-submission#6_participate_in_a_final_defense_and_get_signatures_of_approval.

Once the final version of the thesis is approved by the committee, the student or the Committee Chairperson must initiate the **Signature Approval Page** as explained here: https://graduate.ucr.edu/dissertation-and-thesis-submission#6_participate_in_a_final_defense_and_get_signatures_of_approval.

M.S. Thesis Committee Members

A student proposes the members of the M.S. thesis committee by submitting the Advancement to Candidacy form in R'Grad. Students should contact their committee members prior to nominating them. Upon approval by the Graduate Advisor and Graduate Dean, the committee is appointed and becomes fully responsible for the student's academic guidance and evaluation. The following rules apply to the committee:

- The committee must consist of at least 3 members, the majority of whom must be affiliated with the ECE Department.
- All committee members should normally be voting members of the UC Academic Senate. Any exceptions must hold a Ph.D. and be qualified for a UC faculty appointment. To request an exception, **a curriculum vitae and a memo justifying the appointment must be submitted at the time of submitting the application for candidacy form**. A memo need not be written for those holding Adjunct faculty positions to be members but is needed for adjuncts to be the chairperson of the committee. Exceptions will be reviewed on an individual basis.
- In all cases, the absolute majority of the committee must be members of the UCR academic senate. Non-UCR faculty, approved by Grad Division, who are Academic Senate members at their universities, can be counted as Academic Senate members on the committee.
- To avoid conflicts of interest or the appearance of a conflict of interest, when domestic partners or spouses are a majority of the faculty overseeing a thesis, another faculty member will be added to that committee.

The committee's chairperson is normally the student's Faculty Advisor and:

- Must be an ECE faculty member.
- Must be a voting member of the UC Academic Senate. Adjunct Faculty and Cooperative Extension Specialists may serve as sole chairs of committees if the Graduate Dean approves and the absolute majority of the committee are members of the UCR academic senate. Requests for such exceptions are reviewed on a case-by-case basis.

F. Plan II: Comprehensive Exam (Non-Thesis)

1. Timeline

The following tables summarize the key milestones of the M.S. Plan II (Non-Thesis) plan.

Timeline of M.S. Plan II (Exam Plan)	
Submit a course plan, drafted in consultation with the M.S. Graduate Program Advisor	Start of program
Take classes	Normally between one and two years
Submit Advancement to Candidacy form	First week of desired quarter of graduation
Submit application to graduate through R'Web	By Mon. of 4 th week of graduation quarter
Register for the Comprehensive Exam	One month prior to exam
Take Comprehensive Exam	Exam is offered at the end of each Fall and Spring quarter

2. *Comprehensive Exam Requirement*

Students that choose Plan II for degree completion are required to pass a Comprehensive Exam. The exam is administered by the Graduate Committee twice a year, **at the end of the Fall and Spring quarters**. Generally, exams are held the week following final examinations. There are no additional exam offerings. It is a five-hour long, written, closed-book exam. **M.S. students will be exempt from problems on courses for which they received a grade of “A” or higher for up to three of the five subjects.**

The exam consists of five questions selected from **one** of the following three exam areas:

- Nano-materials and Devices
- Signals, Systems, and Machine Intelligence
- VLSI Circuits and Systems

When registering to take the exam, a student must select one of these three subject areas, and five subjects (courses) within this area (see section below for course subject listings). Test problems will draw primarily from material related to graduate courses; however, a minor portion of the test may involve problems from closely related material.

To take the exam, the students must complete the registration form at least one month prior to the exam date. Generally, two months before the exam, students are notified by email that registration is open.

The comprehensive exam is held during the in-between-quarter period as explained here: <http://graduate.ucr.edu/graduation.html>. M.S. students who have completed all other degree requirements and are taking the comp exam are degree candidates for the following term, but do not register or pay for an additional term (e.g. Spring 2021 exams have a Summer 2021 degree).

A student is allowed a maximum of two attempts at passing the exam. A student who failed in the first attempt has two options: s/he may switch to Plan I or must take the examination again at the time of **the immediate next offering**. On the second attempt, students only need to re-take the exam in subjects that they failed the first time (no subject changes allowed). A student who has failed the examination twice is removed from the program. A student who registered for an exam but did not show up is considered to have failed.

Normally, students should take the Comprehensive exam after completing all coursework. This entails the risk that a student who does not pass the Comprehensive exam on the first attempt will need to re-take the exam the next time it is offered and delay graduation by one to two quarters. For example, if a student who is admitted in Fall 2020 is planning to graduate at the end of Spring 2021, s/he should take the exam at the end of June 2021. If the student fails at the first attempt in Spring, s/he may re-take the exam in December 2021, and graduate after completing all other requirements (assuming the student passes the second time).

Students must pass the Comprehensive exam at any time prior to the end of the second year of their studies. Exceptions can be made for those students who were admitted to the program with

substantial deficiencies in their education, and for this reason, were assigned to the remedial undergraduate courses covering these deficiencies.

3. *Comprehensive Exam Course Subjects*

When registering for the Comprehensive exam, students must choose their exam area (either Nanomaterials and Devices, Signals, Systems, and Machine Intelligence, or VLSI Circuits and Systems), and five subjects within this area to take the exam on. In this section, we list the courses that count within each of the three areas. Please refer to the MS sample course plans and the UCR General Catalog (<https://registrar.ucr.edu/registering/catalog>) for descriptions of the courses.

Please be advised, the following course listings are **only intended to be used for selecting courses for the Comprehensive exam**. In registering for courses, students may choose to follow any of the approved MS course plans that are suitable for their study objectives, in consultation with the MS Graduate Advisor and/or the Graduate Advisor. Each student's course plan may include courses listed under different areas and may include both graduate and undergraduate courses in Electrical Engineering and related subject areas.

Nano-materials and Devices

EE 201	Applied Quantum Mechanics
EE 202	Fundamentals of Semiconductors and Nanostructures
EE 203	Solid State Devices
EE 204	Advanced Electromagnetics
EE 205	Optoelectronics and Photonic Devices
EE 206	Nanoscale Characterization Techniques
EE 207	Noise in Electronic Devices
EE 208	Semiconductor Electron, Phonon, and Optical Properties
EE 209	Semiclassical Electron Transport
EE 212	Quantum Electron Transport
EE 213	Computer-Aided Electronic Circuit Simulation
EE 214	Quantum Computing
EE 215	Stochastic Processes
EE 216	Nanoscale Phonon Engineering
EE 219	Advanced CMOS Technology
EE 220	Applied Ferromagnetism
EE 223	Numerical Analysis of Electromagnetic Devices
EE 230	Mathematical Methods for Electrical Engineering

Signals, Systems, and Machine Intelligence

EE 210	Advanced Digital Signal Processing
EE 211	Adaptive Signal Processing

EE 215	Stochastic Processes
EE 218	Power System Steady-state and Market Analysis
EE 224	Digital Communication Theory and Systems
EE 225	Error-Correcting Codes
EE 226	Wireless Communications
EE 230	Mathematical Methods for Electrical Engineering
EE 231	Convex Optimization in Engineering Application
EE 232	Introduction to Smart Grid
EE 235	Linear System Theory
EE 236	State and Parameter Estimation Theory
EE 237	Nonlinear Systems and Control
EE 238	Linear Multivariable Control
EE 239	Optimal Control
EE 240	Pattern Recognition
EE 241	Advanced Digital Image Processing
EE 243	Advanced Computer Vision
EE 244	Computational Learning
EE 245	Advanced Robotics
EE 246	Intelligent Transportation Systems
EE 249	Power System Dynamics
EE 250	Information Theory
EE 252	Data Center Architecture
EE 253	Electric Power Distribution Systems
EE 258	Modeling and Synthesis of Cyber-Physical Systems
EE 260*	Intro to Reinforcement Learning with Applications in Smart Cities - W21 with Dr. Yu

*One time course offering, subject to change

VLSI Circuits and Systems

EE 201	Applied Quantum Mechanics
EE 202	Fundamentals of Semiconductors and Nanostructures
EE 203	Solid State Devices
EE 213	Computer-Aided Electronic Circuit Simulation
EE 215	Stochastic Processes
EE 217	GPU Architecture and Parallel Programming
EE 219	Advanced CMOS Technology
EE 221	Radio-Frequency Integrated Circuit Design
EE 222	Advanced Radio-Frequency Integrated Circuit Design
EE 230	Mathematical Methods for Electrical Engineering
EE 235	Linear System Theory

EE 240	Pattern Recognition
EE 243	Advanced Computer Vision
EE 252	Data Center Architecture
EE 255	Real-Time Embedded Systems
EE 260*	Hardware Design for Machine Learning - SP21 with Dr. Tan
EE 260*	Quantum Computing and Computer Architecture - SP21 with Dr. Tseng

*One time course offering, subject to change

IV. Doctor of Philosophy (Ph.D.) Degree Program

The main component and focus of the Ph.D. program is the independent research culminating in a Ph.D. thesis. Students should find a Faculty Advisor and participate in research activities as soon as possible. However, students must also take courses to help them establish both breadth and depth of knowledge in their area of research.

In what follows, additional details about the requirements and milestones of the Ph.D. program are provided.

A. Coursework Requirements

The Ph.D. program **requires completion of at least 36 units of approved graduate coursework in EE and related areas. Only courses numbered between 200 and 279, excluding colloquium courses, may be counted towards this requirement.**

While Ph.D. students **may take courses at any time until graduation**, the above-stated coursework **requirements must be completed prior to the student's advancement to candidacy.**

Note that this requirement is only a **minimum requirement**. Students may need to take considerably more than 36 units of coursework in order to establish breadth and depth of knowledge. Students should design an appropriate course plan in coordination with their research advisor or the ECE Graduate Advisor. While only “formal” graduate courses (i.e., courses numbered between 200 and 279, excluding colloquiums) may be counted towards the Ph.D. degree requirements, students may additionally take undergraduate courses and “informal” courses as needed in order to complement their research program.

B. Timeline

The following table shows the typical timeline of the Ph.D. program:

Timeline of Ph.D. degree	
Submit a course plan, drafted in consultation with Faculty Advisor and/or Graduate Advisor	Start of program
Start research with Faculty Advisor	Start of program
Take classes	Unit requirements must be completed within first 2 years

Pass Preliminary Exam	Before the end of second year (normally at end of first year)
Oral Qualifying Exam Committee approved then Pass Oral Qualifying Exam	Before the end of second or third year
Continue research, write Ph.D. Thesis	Normally 3.5 to 5 years from start of program
Submit application to graduate through R'Web	By Mon. of 4 th week of graduation quarter
Defend Ph.D. Thesis, submit it to Graduate Division	Quarter of Graduation

C. English Proficiency Exam (Versant Test)

Ph.D. students whose native language is not English and are promised TA (or TA/GSR) support as part of their UCR admission offers, must pass the English Proficiency Requirement (Versant test) prior to the start of their second year of study. If they do not meet this requirement at the time they are offered a TA position by the Department (and thus are not eligible for a TA position), they will be considered to have declined their appointment. The English Proficiency requirements for TA eligibility are described in Section V.

D. Preliminary Exam Requirement

The purpose of the Preliminary Exam is to screen candidates for continuation in the doctoral program. This exam is a written, closed-book exam, consisting of questions in five subjects within one exam area, similar to the M.S. comprehensive examination (see respective section). Two main differences exist between the Ph.D. preliminary examination and M.S. comprehensive examination: First, Ph.D. students must select at least two problems from the “basic” courses and at least two from the “advanced” courses designated in their exam area. This gives one course flexibility to be chosen from either the basic or advanced list. Second, Ph.D. students will be exempt from problems on courses for which they received a grade of “A” or higher for all five subjects.

Students who did not pass all five problems at the Ph.D. level on their first attempt will be given a second chance, where they will be required to solve problems only from the courses they did not pass at the Ph.D. level in their first attempt. **Exam subjects cannot be changed on the second attempt.**

The normative time for taking the preliminary exam is by the end of the student’s third quarter. Students must pass this exam by the end of the second year, otherwise, they are considered to be making unacceptable progress towards their degree.

The Ph.D. Preliminary Exam is offered simultaneously with the M.S. Comprehensive Exam, at the end of the Fall and Spring quarters. There are no additional exam offerings. **To take the exam, students must complete the registration form at least one month prior to the exam date.** Students who have waived all 5 subjects with grades of “A” or higher are required to submit a registration form. Generally, two months before the exam, students are notified by email that registration is open.

Plan II M.S. candidates who took the M.S. comprehensive exam, successfully passed courses at the Ph.D. level, and are then admitted to the Ph.D. program, are given credit for having passed the Ph.D. preliminary exam for those courses. Please refer to the following section for the list of basic and advanced courses in each area.

E. Preliminary Exam Course Subjects

When registering for the Preliminary, students must choose their exam area (either Nanomaterials and Devices, Signals, Systems, and Machine Intelligence, or VLSI Circuits and Systems), and five subjects within this area to take the exam on. In this section, we list the courses that count as Basic and Advanced within each of the three areas. Please refer to the UCR General Catalog (<https://registrar.ucr.edu/registering/catalog>) for descriptions of the courses.

The courses outside of EE listed below can be used for the Preliminary exam only if the student is exempted by receiving a grade of “A” or higher. Instructors of non-EE courses are not obligated to write exams and the department will not ask them to do this. An exception may be considered if a course offered by another department is taught by an ECE faculty member.

Please be advised, the following course listings are **only intended to be used for selecting courses for the Preliminary exam**. In registering for courses, Ph.D. students may choose any courses that are suitable for their study and research objectives, in consultation with their Faculty Advisor and/or the Graduate Advisor. Each student’s course plan may include courses listed under different areas and may include both graduate and undergraduate courses in Electrical Engineering and related subject areas, as long as the minimum unit requirements are satisfied (see Sections III and IV).

Nano-materials and Devices

BASIC COURSES

EE 201	Applied Quantum Mechanics
EE 202	Fundamentals of Semiconductors and Nanostructures
EE 203	Solid State Devices
EE 204	Advanced Electromagnetics
EE 205	Optoelectronics and Photonic Devices
EE 206	Nanoscale Characterization Techniques
EE 215	Stochastic Processes
EE 220	Applied Ferromagnetism
EE 230	Mathematical Methods for Electrical Engineering

ADVANCED COURSES

EE 207	Noise in Electronic Devices
EE 208	Semiconductor Electron, Phonon, and Optical Properties
EE 209	Semiclassical Electron Transport
EE 212	Quantum Electron Transport
EE 214	Quantum Computing
EE 216	Nanoscale Phonon Engineering
EE 219	Advanced CMOS Technology
EE 223	Numerical Analysis of Electromagnetic Devices

Signals, Systems, and Machine Intelligence

BASIC COURSES

EE 210	Advanced Digital Signal Processing
EE 215	Stochastic Processes
EE 224	Digital Communication Theory and Systems
EE 230	Mathematical Methods for Electrical Engineering
EE 231	Convex Optimization in Engineering Application
EE 235	Linear System Theory
EE 236	State and Parameter Estimation Theory
EE 240	Pattern Recognition

ADVANCED COURSES

EE 211	Adaptive Signal Processing
EE 218	Power System Steady-state and Market Analysis
EE 225	Error-Correcting Codes
EE 226	Wireless Communications
EE 232	Introduction to Smart Grid
EE 237	Nonlinear Systems and Control
EE 238	Linear Multivariable Control
EE 239	Optimal Control
EE 241	Advanced Digital Image Processing
EE 243	Advanced Computer Vision
EE 244	Computational Learning
EE 245	Advanced Robotics
EE 246	Intelligent Transportation Systems
EE 249	Power System Dynamics
EE 250	Information Theory
EE 252	Data Center Architecture
EE 253	Electric Power Distribution Systems
EE 258	Modeling and Synthesis of Cyber-Physical Systems
EE 260*	Intro to Reinforcement Learning with Applications in Smart Cities - W21 with Dr. Yu

*One time course offering, subject to change

VLSI Circuits and Systems

BASIC COURSES

EE 213	Computer-Aided Electronic Circuit Simulation
EE 215	Stochastic Processes
EE 217	GPU Architecture and Parallel Programming
EE 221	Radio-Frequency Integrated Circuit Design
EE 240	Pattern Recognition
EE 255	Real-Time Embedded Systems

CS 203	Advanced Computer Architecture
CS 218	Design and Analysis of Algorithms

ADVANCED COURSES

EE 201	Applied Quantum Mechanics
EE 202	Fundamentals of Semiconductors and Nanostructures
EE 203	Solid State Devices
EE 219	Advanced CMOS Technology
EE 222	Advanced Radio-Frequency Integrated Circuit Design
EE 230	Mathematical Methods for Electrical Engineering
EE 235	Linear System Theory
EE 243	Advanced Computer Vision
EE 252	Data Center Architecture
EE 260*	Hardware Design for Machine Learning - SP21 with Dr. Tan
EE 260*	Quantum Computing and Computer Architecture - SP21 with Dr. Tseng
CS 201	Compiler Construction
CS 202	Advanced Operating Systems

*One time course offering, subject to change

F. Oral Qualifying Exam and Committee

1. Presentation and Written Report

After passing the preliminary examination, the students are expected to demonstrate that they have a thorough understanding of their research field and are capable of doing cutting-edge research. For that purpose, students must choose a research topic under the guidance of their Faculty Advisor and orally present to the Ph.D. Qualifying Committee.

The presentation must be accompanied by a written report, written in proper technical English and in the style of a typical Electrical Engineering conference or journal publication. This report should clearly describe the proposed problem under study, demonstrate substantial knowledge of the topic and related issues, present the research results the student has obtained, and describe future research plans. The report must be delivered to the committee members at least **one week** prior to the exam.

Through both the oral presentation and the written report, students must demonstrate the ability to carry out a program of independent research and to report the results in accordance with standards observed in recognized technical journals. Based on the written report and the oral presentation, a recommendation will be made by the Qualifying Committee that the student either 1) passes the exam, or 2) revises the report and/or the presentation and re-takes the exam, or 3) withdraws from the Ph.D. program.

To take the Oral Qualifying Exam, students must follow the checklist and adhere to the deadlines detailed in the following text.

The student must pass this exam in no more than two attempts. The normative time for taking the Oral Qualifying Exam is by the end of the second year.

The Oral Qualifying Examination is closed to the public.

2. *Committee*

The Ph.D. Qualifying Committee must consist of five members. Students should contact their committee members prior to nominating them. The following rules apply to the Oral Examination Committee:

- It is critical that **the oral committee be officially pre-approved prior to the exam or the exam will be invalidated by Graduate Division**. A petition to nominate committee members should be submitted to the department one month prior to the date of the Oral Exam and is due to Graduate Division from the department a minimum of two weeks in advance of the exam. Nomination is done using the R'Grad online portal.
- All committee members should normally be voting members of the UC Academic Senate. That means, they should be ladder-ranked (tenure-track or tenured) faculty members. Any exceptions must hold a Ph.D. and be qualified for a UC faculty appointment. To request an exception, **a curriculum vitae and a memo justifying the appointment must be submitted at the time of submitting the Form 2**. A memo need not be written for those holding Adjunct faculty positions to be members but is needed for adjuncts to be the co-chairperson of the committee. Exceptions will be extremely rare and reviewed by the Grad Advisor on an individual basis.
- In all cases, the absolute majority of the committee must be members of the UCR Academic Senate. Non-UCR faculty, approved by Grad Division, who are Academic Senate members at their universities, can be counted as Academic Senate members on the committee. However, non-UCR faculty cannot be the chairperson of the committee.
- The majority of the committee members must be affiliated with the ECE Department.
- At least one member of the Qualifying Committee, designated to be the "outside member," must be a voting member of the UC Academic Senate who does not hold an appointment in the ECE department. The "outside member" cannot be an ECE Cooperating Faculty.
- The outside member does not need to have special expertise in the area of the student's dissertation; this member's academic field may be unrelated to the field of study of the student and the other committee members. This person represents the faculty at large, and acts as a "third party ensuring fairness."

The committee's chairperson is normally the student's Faculty advisor and:

- Must be affiliated with the ECE Department.
- The chairperson must be a voting member of the UC Academic Senate. If approved by the Graduate Division, an adjunct or research faculty member can serve as a co-chair with an academic senate member. However, the approval process can take time and approval is not common.

Please refer to <https://graduate.ucr.edu/regulations-and-procedures#doctoral> for additional regulations regarding the selection of Ph.D. Oral Qualifying Committee members.

3. *Change of Committee*

Change of Committee Membership Process: If a change needs to be made to a student's approved Oral Qualifying Examination Committee, a new Nomination of Committee form should be submitted as soon as possible in R'Grad. If the Chair of the committee is being changed, the Dissertation/Thesis Committee

Nomination form must be accompanied by a memo of explanation via email to Kim at kim@ece.ucr.edu. In order to meet Graduate Division Deadlines, **all changes to the committee should be submitted to the Graduate Program Coordinator as early as possible, but no later than two weeks in advance of the exam date.**

Additional information for the Qualifying Exam can be found at <https://graduate.ucr.edu/regulations-and-procedures#doctoral>

G. Advancement to Candidacy

After successful completion of the Preliminary and Oral Qualifying examinations and completion of all University and departmental requirements, the student is eligible for formal advancement to candidacy. The student will be billed the Candidacy Fee after the degree check has been completed. After a successful degree check, Graduate Division notifies the student and ECE of the formal advancement to candidacy.

Checklist of Requirements for the Oral Qualifying Exam:

1. Review your degree audit via R'Web (see Degree Audit icon under your authorized applications menu). Confirm all course requirements have been or will be completed by the end of the quarter you wish to advance to candidacy. Discuss any discrepancies with Kim at kim@ece.ucr.edu. **You should check your degree audit by the first week of the quarter prior to your Oral Qualifying Exam.**
2. Work with your Faculty Advisor to determine the five faculty members (including your faculty advisor as chair and one faculty from another Department who will be your outside member).
3. Confirm that all members are willing to serve on your committee, and find a suitable date and time that works for everyone on the committee. Doodle www.doodle.com is a helpful scheduling tool.
4. After a time that works for all committee members is agreed upon, prepare the Nomination for Oral Qualifying Exam Committee (Form 2) found on R'Grad. **One month prior to your Oral Qualifying exam, you should: a) submit your Form 2 and b) email a draft of your written report to ecegradoffice@ece.ucr.edu.** If any nominee for the committee is not a member of the UC Academic Senate, a curriculum vitae and a memo justifying the appointment must be submitted at the time of submitting the Form 2.
5. When conducting the Oral Qualifying Exam, committees will use Zoom or other video conference options. In-person exams are not currently permitted as of Fall 2020. **Please carefully read the [Signing Regulations - Orals](#) from Grad Division.** Students can [submit a ticket to ITS to request a Zoom Pro account](#) for their Oral Qual exam.
6. Graduate Division will email you with the approval of your Oral Exam Committee on your Form 2. Check the form for accuracy and email Kim at kim@ece.ucr.edu right away, if any issues exist. **Important: Students are responsible to ensure Grad Division officially approves their oral committee prior to the Oral Qualifying exam or the exam will be invalidated.**
7. Contact all committee members again to confirm the date, time and video conference details.
8. **You must send your written report to your entire committee a minimum of one week in advance of your exam.** Please refer to Section IV regarding the requirements for this document. **If you fail to adhere to the deadline to send your report to your committee, you may fail your exam.**
9. **Immediately after your exam, the student or Committee Chairperson must initiate the Oral Qualifying Exam Results Form via DocuSign found on the Grad Division [Petitions and Forms](#) website.**

H. Degree Completion

Important: Students must apply to graduate on R'Web by Monday of Week 4 of the planned degree completion term. Students who fail to submit the application to graduate may have their degree conferral delayed to the following term.

Every student is individually responsible for the Graduation Procedures and Deadlines information here: <http://graduate.ucr.edu/graduation.html> and the **Dissertation/Thesis Filing** and graduation requirements here: <http://graduate.ucr.edu/dissertation.html>.

1. *Dissertation and defense*

After completion of the dissertation research, a written copy of the dissertation must be submitted to and approved for defense by the student's Ph.D. Dissertation Committee. Once a draft has been approved for defense, an oral defense of the dissertation will be scheduled. This defense consists of a seminar open to the entire academic community, followed by a question/answer period conducted by the Ph.D. Dissertation Committee.

A minimum of two weeks prior to the Ph.D. defense, students should complete the Ph.D. Dissertation Flyer Template with the defense information and email the completed file as a word document to ecegradoffice@ece.ucr.edu for posting.

When conducting the Final Defense, committees will use Zoom or other video conference options. In-person exams are not currently permitted as of Fall 2020. **Please carefully read the [Signing Regulations - Final Defense](#) from Grad Division.** Students can [submit a ticket to ITS to request a Zoom Pro account](#) for their Final Defense.

Immediately after the defense, the student or Committee Chairperson must initiate the Final Defense Approval Form via DocuSign found on the Grad Division [Petitions and Forms](#) website.

Once the final version of the dissertation is approved by the committee, the student or Committee Chairperson must initiate the Signature Approval Page for Dissertation via DocuSign found on the Grad Division [Petitions and Forms](#) website. Details about the signature page are in section II.

2. *Dissertation committee*

A student's Ph.D. Dissertation Committee is nominated using Ph.D. [Report of Oral Qualifying Exam and Nomination of Dissertation Committee form](#). The following rules apply to the committee:

- The committee consists of at least three Academic Senate faculty members, the majority of whom must be affiliated with the ECE department.
- All committee members should normally be voting members of the UC Academic Senate. Any exceptions must hold a Ph.D. and be qualified for a UC faculty appointment. To request an exception, **a curriculum vitae and a memo justifying the appointment must be submitted at the time of submitting form 3.** A memo need not be written for those holding Adjunct faculty positions to be members but is needed for adjuncts to be the chairperson of the committee. Exceptions will be reviewed on an individual basis.

- In all cases, the absolute majority of the committee must be members of the UCR academic senate. Non-UCR faculty, approved by Grad Division, who are Academic Senate members at their universities, can be counted as Academic Senate members on the committee. However, non-UCR faculty cannot serve as the chairperson on the committee.
- To avoid conflicts of interest or the appearance of a conflict of interest, when domestic partners or spouses are a majority of the faculty overseeing a thesis, another faculty member will be added to that committee.

The committee's chairperson is normally the student's Faculty Advisor and:

- Must be an ECE faculty member.
- Must be a voting member of the UC Academic Senate. Adjunct Faculty and Cooperative Extension Specialists may serve as sole chairs of committees if the Graduate Dean approves and the absolute majority of the committee are members of the UCR Academic Senate. Requests for such exceptions are reviewed on a case-by-case basis. However, the approval process can take time and approval is not common.

Please refer to <https://graduate.ucr.edu/regulations-and-procedures#doctoral> for additional rules regarding the selection of Ph.D. Dissertation Committee members.

Change of Committee Membership Process: If a change needs to be made to a student's approved Dissertation Committee, the [Dissertation/Thesis Committee Nomination form](#) must be accompanied by a memo of explanation via email to Kim at kim@ece.ucr.edu. In order to meet Graduate Division Deadlines, **all changes to the committee should be submitted to the Graduate Program Coordinator as early as possible, but no later than one month in advance of the exam date.**

3. *Filing*

Upon completion of the defense and approval of the dissertation, the Doctoral Committee recommends, by signing the [Report of Final Defense Approval Form via DocuSign](#), that the Ph.D. be conferred. All members must also sign the [Signature Approval Page for Dissertation via DocuSign](#), which you will need to submit separately to Graduate Division as explained in section II.

Additionally, a draft of the dissertation must be submitted to the Graduate Division at least two weeks prior to the final filing deadline. You will also need to submit the final version on or before the deadline. All Ph.D. students are required to follow the checklist at <http://graduate.ucr.edu/dissertation.html> for the steps needed and applicable deadlines.

Ph.D. degrees are conferred, as of the last day of the regular academic quarter in which all requirements have been satisfied, including the final positive recommendation of the Doctoral Committee, and the acceptance of the approved dissertation by the Graduate Division and processing by the Registrar's Office. A graduate student must be registered or on Filing Fee status the quarter in which the dissertation is submitted and the degree is to be conferred. No fee for filing the manuscript itself is required.

Every student is individually responsible for the Graduation Procedures and Deadlines information here: <http://graduate.ucr.edu/graduation.html>.

I. **M.S. on the way to a Ph.D. Degree**

Ph.D. students who meet all the degree requirements for an M.S. in Electrical Engineering may have the option to obtain an M.S. at any point during their Ph.D. studies. Students may select from either the M.S. Plan I (thesis) or M.S. Plan II (exam) options if they meet all the M.S. degree requirements that were in place at the time of their admission to the Ph.D. program. Ph.D. students who wish to obtain an M.S. on the way to their Ph.D. degree must first obtain permission from their faculty (research) advisor and the Graduate Advisor. In this case, students will need to apply to graduate in R'Web twice: once for the M.S. graduation term and again for the Ph.D. graduation term. Students who took the Preliminary exam as part of the Ph.D. program may use the courses they passed toward the five courses for the M.S. Comprehensive exam. Students may use a maximum of three "A" grades to waive courses for the Comprehensive exam.

V. Financial Assistance

Financial awards may include research or teaching assistantships, and fellowships. Typically, teaching and research assistantships are awarded on a competitive basis and include full or part-time salary and additional payment of the Graduate Student Health Insurance Plan (GSHIP fee and a Partial Fee Remission). Non-resident students *may* also receive a partial or full non-resident tuition (NRT) remission.

Additional information and requirements about employment and funding are available from Grad Division here: <https://graduate.ucr.edu/funding>.

A. Fellowships

All students with fellowship are required to make acceptable progress toward their degree including maintaining a quarterly and cumulative GPA of 3.0 or higher or they will lose their fellowship. Additional fellowship requirements are detailed here: <https://graduate.ucr.edu/funding#fellowships>.

B. Employment

Graduate students who receive employment are generally either a Teaching Assistant (TA) or Graduate Student Researcher (GSR). Additional information and requirements about graduate student employment are available on the Graduate Division website here: http://graduate.ucr.edu/TA_GSR.html.

1. Teaching Assistants (TA)

Administration and selection of teaching assistants (TAs) are done by each program offering the course. For Electrical Engineering courses, TAs are assigned through the ECE department. The assignment of TAs to Electrical Engineering classes is performed as follows:

- Prior to the start of each quarter, the available TA positions are announced, and students who wish to be considered for TAs are required to apply. The announcement is made via e-mail to all graduate students. The application deadline is stated in the announcement and depends on the time remaining for the beginning of classes. Multiple announcements may be made if additional TA positions become available after the first one.
- The first priority for appointment goes to students who have unfulfilled TA commitments as part of their support package.

- Remaining TA positions will be assigned to eligible students in the graduate program or in cognate programs.

Assistants are expected to aid faculty members in the instructional or research programs. A 50% appointment requires an average of 20 hours per week.

Eligibility requirements are explained on the Graduate Division site here:

http://graduate.ucr.edu/TA_GSR.html. The following are a summary of key requirements to be eligible to TA:

English Proficiency Requirement (Versant Test)

The purpose of the Versant English Proficiency Exam requirement (formerly SPEAK test) is to evaluate English proficiency and comprehensibility. To be eligible to TA, graduate students in these categories must pass the Versant test:

- If a student comes from a country where English is not the first language and has not yet taken an English Proficiency Exam (Versant or SPEAK Test).
- If the last exam is more than 6 months old and did not score a clear pass (50).
- If the student is a US Citizen or Permanent Resident and comes from a country where English is not the first language.
- If a student did not receive a score of 23 or higher on the TOEFL iBT speaking portion.

Any grad student in the above categories hoping to be considered to serve as a TA should take the Versant test.

Scores on the Versant test are as follows:

- 50 and above: Clear Pass
- 40 – 49: Conditional Pass
- 39 and below: Fail

If you have received a score of 23 or above on the speaking portion of the TOEFL iBT, the Versant test requirement is provisionally waived. If a student's TA evaluations are low on the English proficiency question, then the Versant exam will be required.

Any EE Ph.D. student who is assigned a TA position and does not have a "Clear Pass" in the Versant test must attend the English language classes offered at the UCR Extension Center until a "clear pass" is obtained. Students are provided with one quarter of free instruction at UCR Extension Center. If a student is still not able to obtain a Clear Pass, he/she is responsible for paying for the instruction until a "clear pass" is obtained on the Versant test. A student with a "conditional pass" can be appointed as a TA. However, these appointments will only be approved for one quarter at a time. Every quarter, a student with a conditional pass can continue serving as a TA only if approved by the Graduate Dean.

This decision is made on the basis of:

- Departmental recommendation, including an assessment of the student's academic ability;
- Student teaching evaluations;
- Other evidence of commitment to/performance in teaching (e.g., faculty evaluations or statements of support, videotapes);
- Evidence of a good-faith effort to improve English skills; and

- Relative proximity to the level of competence represented by a clear pass.

TADP New TA Orientation

All new TAs are required to take the TADP Orientation. The TA orientation should be completed before the start of the first quarter a TA begins teaching. Students sign up for the workshop series online at <https://tadp.ucr.edu/ta-training/orientation>.

ECE Department New TA Orientation

The ECE Department holds a yearly New TA orientation before the start of the fall quarter. Completion of this orientation is required in addition to the campus trainings and requirements for TA eligibility.

2. Graduate Student Researcher (GSR)

Research assistants (termed Graduate Student Researchers, GSRs) are selected by the faculty members directing research projects and not by the department and are supported by research contracts and/or grants. However, faculty members consult with the Graduate Advisor and Graduate Program Coordinator concerning the availability of qualified students seeking support.

C. Salary and Stipend Disbursement

Direct Deposit statements are available online; students employed by other departments should verify the disbursement location and time from the administrative office of the employing department. The ECE Department strongly encourages each employee to participate in the Direct Deposit program. Should you desire a traditional paycheck, you will need to request a waiver and the paycheck will be sent to your residence via U.S. Postal Service (USPS). It is incumbent upon the employee to ensure your local address is current in the Payroll/Personnel System (UC Path).

VI. Miscellaneous Information

A. Contacts

1. Key personnel and points of contact

The key points of contact for current graduate students are the Graduate Program Coordinator, Graduate Advisor, and Advisor to M.S. Students for each area listed below. They can be of assistance in degree-related academic matters, as well as non-degree-related matters such as health services, housing, communication deficiencies, and career development.

Graduate Program Coordinator: Kim Underhill. E-mail: kim@ece.ucr.edu

Graduate Advisor: Prof. Hamed Mohsenian-Rad. E-mail: hamed@ece.ucr.edu

Advisors to M.S. Students:

- **NMD:** Assoc. Prof. Ming Liu mingliu@ucr.edu
- **SSMI:** Assoc. Prof. Shaolei Ren sren@ece.ucr.edu
- **VCS:** Asst. Prof. Hyoseung Kim hyoseung@ucr.edu

2. *ECE Department Staff*

The administrative staff of the ECE Department is located in Suite 343 of Winston Chung Hall (WCH). A complete listing of the names and contact information of the ECE Department staff members can be found at <http://www.ece.ucr.edu/about/staff>.

B. Safety

Safety precautions shall be exercised, observed and complied with at all times – no exceptions. All employees are required to attend General Safety Orientation and may be required to attend Laboratory Safety Orientation depending upon duties and tasks performed. In addition, lab specific or task specific training may be required depending upon requirements of the laboratory assigned or employed. Students must become acquainted with all safety rules and procedures before working in the machine shop or laboratories. Manglai Zhou, the department safety coordinator, can be reached at manglai.zhou@ucr.edu or in room 137 of Winston Chung Hall.

C. Machine Shop

Students may borrow equipment and use certain machine tools with supervision and prior approval of the ME Machine Shop Manager by following the instructions here: <https://www.me.ucr.edu/machineshop>.

D. Computers

Computers and a printer available for use by graduate students are located in the ECE Computer Labs. In addition, there are a number of computer labs distributed around the UCR campus, including the Science Library. Students should register for email and network accounts on the ECE server when they first enroll for graduate studies. Registration forms and submittals can be obtained online from the [ECE Department Systems Administrator](#), by email to systems@ece.ucr.edu, or in Room 107 of Winston Chung Hall.

Please check your email frequently; this is the primary method of information dissemination regarding deadlines, seminars, etc.

E. Academic Appeals

UCR has adopted a campus-wide graduate-level academic appeals policy. To get more information, please visit <https://graduate.ucr.edu/regulations-and-procedures> and scroll down to the section entitled "Academic Integrity, Appeal Procedures, and Dispute Resolution." In that section, you will find 1) program-level appeal procedures that apply to all departments and programs and govern appeals proceedings at the program level, and 2) campus-level appeal procedures that enable students and/or faculty to appeal decisions made at the program level to the Graduate Division (and in special cases, to the Graduate Council).

F. ECE Department Administration

As of September 2020, for the safety of the entire UCR community, the chancellor encourages students to stay home and remain off campus. Students are expected to regularly check the [Campus Return site](#) as information and procedures are updated regularly. Anyone planning to return to campus must follow all health and safety protocols including [daily wellness checks](#).

1. *Facility Access and Keys*

COVID-Caveat – No one should go to campus unless approved by their supervisor and they follow all protocols prior to coming to campus and while on campus. Violations of protocol will be reported to the faculty research advisor (PI). Too many collective violations will be reported to the Dean and could potentially jeopardize research and other campus functions.

Winston Chung Hall (WCH) uses card access for most of the doors in the building. The “key” is the student ID card, “UCR R’Card,” students receive when first registered at UCR. Card key access to general EE graduate student areas is granted to students when they first apply for a computer and email account after the graduate student orientation. This access will be continuous as long as a student is in good academic standing.

Access to research laboratories must be requested on a quarterly basis by the faculty member supervising the specific research laboratory. The Department Chair grants access to instructional laboratories and the TA room in 223 WCH to TAs on a quarterly basis. If standard keys are required for a specific door, an ECE Key Issue form, approved by the student’s Advisor, must be submitted to the Department Access Control Manager. Replacement of damaged or lost cards is the responsibility of the students. Lost keys should be reported immediately to the Department Access Control Manager.

2. *Mail*

COVID-Caveat – If you are asked to pick up mail or packages from 343 WCH you will need to forward approval from your faculty research advisor (PI) and will need to email your request to nkramer@ece.ucr.edu by providing your reason and your ENGR username. Before you come to campus you must follow all COVID protocols.

Incoming mail and intercampus notices may be picked up at 343 Winston Chung Hall. Outgoing intercampus mail and official university mail can be deposited in the Departmental Administrative Suite in Room 343 WCH. The Department does not forward mail. **Students should send and receive all personal mail (e.g., personal letters, bills, non-technical magazines) from their personal residences.**

3. *Photocopying*

COVID-Caveat – If you need to make photocopies for your research or teaching assistant duties, you should forward the approval email from you faculty research advisor (PI) or the course instructor by email to nkramer@ece.ucr.edu. Before you come to campus you must follow all COVID protocols.

There is a photocopier in the Administrative Suite that is available during regular office hours. Only graduate students copying material **associated with their duties as a research or teaching assistant** may use the photocopier. Personal photocopying, of materials such as notes, homework, exam solutions, textbooks or other items not associated with research or teaching assistant duties is not permitted.

The copying of copyrighted material must be accomplished through the Printing & Reprographics department. This ensures prevention of infringement of intellectual property rights; royalties, patents and other commercial protection authors of various printed works are entitled.

Research or teaching assistants should email a request to Nicole Kramer nkramer@ece.ucr.edu for a copy access code. The request must first be approved by the student’s Faculty Research Advisor or TA course instructor. Photocopy charges will be billed to the appropriate account.

4. *University Letterhead*

The use of University letterhead is for official business only. See your advisor should you feel the use of letterhead is warranted.

5. *Lost Property*

COVID-Caveat – No one should go to campus unless approved by their supervisor and they follow all protocols prior to coming to campus and while on campus.

Lost property should be turned in to the UC Police Station on the corner of Linden Street and Canyon Crest Drive. The Department cannot accept any lost and found items.

VII. Resources

Campus Police - non-emergency calls only. For emergencies, dial 911

<http://police.ucr.edu/>

3500 Canyon Crest Drive | (951) 827-5222

Add the campus police's phone number to your cell phone for quick assistance to your classroom or lab.

Campus Safety Escort Service

<https://wrc.ucr.edu/programs/campus-safety-escort-service>

The CSES office is located in the Women's Resource Center at 260 Costo Hall | (951) 827-3337

Free service – a campus escort will walk you to your car after it gets dark outside.

Career Center

<http://www.careers.ucr.edu/index.html>

Career Center Plaza | (951) 827-3631

Career counseling, interview preparation, workshops, resume/CV and job/internship search assistance.

Counseling and Psychological Services (CAPS)

<http://counseling.ucr.edu>

Veitch Student Center, North Wing | (951) 827-5531

Confidential, free, warm, and welcoming support to promote mental health, emotional resilience and wellness. Workshops and individual appointments available. TAs can refer students for appointments.

Dean of Students Department

<http://deanofstudents.ucr.edu/>

(951) 827-6095

Access to Students Special Services, LGBT Resource Center, and the Student Recreation Center and more.

Electrical and Computer Engineering (ECE) Department

<http://www.ece.ucr.edu/>

343 Winston Chung Hall | (951) 827-2484

Course Offerings: <http://www.ece.ucr.edu/academics/courses>

ECE Department Forms & Resources for grad students: <https://www.ee.ucr.edu/academics/resources>

ECE Graduate Student Association

<http://gsa.ece.ucr.edu>

General Catalog Online

<http://registrar.ucr.edu/registrar/schedule-of-classes/catalog.html>

Graduate Division

<http://graduate.ucr.edu/>

University Office Building | (951) 827-4302

For assistance with financial aid, funding opportunities, dissertation/thesis submission and more.

Graduate Division Student Resources for Current Grads

<http://graduate.ucr.edu/studentresources.html>

Graduate Writing Center

<http://gwc.ucr.edu/>

University Office Building (UOB) 122 | (951) 827-4307

Free writing assistance with abstracts, grant applications, articles, CVs etc.

International Students and Scholars Office

<https://international.ucr.edu/>

Surge Building, Suite 0321 | (951) 827-4113

Office of the Registrar

<http://registrar.ucr.edu>

Student Services Building Room 2249 | (951) 827-7284

Schedule of classes, catalog, registration and payment deadlines, transcript and diploma information.

Ombudsman - Office of the Ombuds (OO)

<http://ombudsperson.ucr.edu>

390 Surge Building | (951) 827-3213

For confidential assistance in resolving various conflicts (fee disputes, instructor-student) on campus.

R'Web

<http://rweb.ucr.edu/>

R'Grad online petitions, enrollment, grades, degree progress, pin, direct deposit, account, and billing.

Student Business Services

<https://sbs.ucr.edu/>

Student Services Building, Room 1111 | (951) 827-3208

Deferred tuition payment plans, student bills/payments, loans and loan counseling.

Student Health Services

<https://studenthealth.ucr.edu/>

health@ucr.edu | (951) 827-3031

Medical care, health insurance, immunization requirements.

Title IX Sexual Harassment Office

<http://titleix.ucr.edu>

349 Surge Building | (951) 827-7070

Sexual assault/violence, domestic violence, dating violence, stalking, sexual harassment, and retaliation.

UCR Graduate Student Association

<http://www.gsa.ucr.edu/>

HUB 203 | (951) 827-3740

UCR Housing Services Office

<https://housing.ucr.edu/>

3595 Canyon Crest Drive | (951) 827-6350

UCR Libraries

<http://library.ucr.edu>

Orbach Science Library | (951) 827-3701 and Tomas Rivera Library | (951) 827-3220

Women's Resource Center

<http://wrc.ucr.edu>

260 Costo Hall | (951) 827-3337