

**MEMORANDUM TO GRADUATE STUDENTS
IN
ELECTRICAL ENGINEERING
(New: Effective for Spring 2018 and Future Enrollees)**

Subject: School of Electrical and Computer Engineering Policies
With Regard to Graduate Studies

The *ECE Memorandum to Graduate Students* provides guidelines for each graduate degree program that the School offers. The *Memorandum* supplements the information and instructions given in the most recent edition of the OSU University Catalog. It is the responsibility of every graduate student to be familiar with the general requirements associated his/her degree program as listed in the Catalog. Specific requirements and options relevant to graduate studies in the School of Electrical and Computer Engineering (ECE) are described herein. The *Memorandum* will change from time to time to reflect updates to the various degree programs and Graduate College policies.

Essential information for all graduate students in the School of Electrical and Computer Engineering is as follows:

New Students:

Prior to or shortly after enrolling in the Graduate College, students who are pursuing a graduate degree in the School of Electrical and Computer Engineering should contact the Graduate Coordinator in the departmental office (Room 215, General Academic Building) for initial advisement. The Graduate Coordinator will assist all incoming graduate students with the selection of first semester courses.

By the middle of the first semester, every graduate student should have contacted and identified an academic advisor to oversee their graduate work.

All Students:

Students are directed to the Graduate College for information regarding the sequence of requirements and milestones. Specifically, note that

- All Students are encouraged to submit a Plan of Study and receive full approval as soon as possible (i.e., during the first semester of matriculation). The Plan of Study is the official contract between the student and the university, irrespective of any changes to the *Memo* that may have occurred after the Plan of Study has been approved.
- The Plan of Study can be revised and resubmitted at any time. However, provisions in previous Plans of Study may be invalidated, per changes in the *Memo*.
- A student's graduate adviser and graduate committee along with the ECE Graduate Coordinator, ECE faculty and ECE staff provide advice. However, the Plan of Study is the

official contract between the student and university, irrespective of the advice that has been received. It is the student's responsibility to manage the Plan of Study process.

- The application for degree (diploma application) must be submitted to the Graduate College at the BEGINNING of the term in which the degree is to be conferred.
- A student **MUST** be enrolled in a minimum of two (2) credit hours during the semester in which degree requirements are completed.

MASTER OF ENGINEERING DEGREE:

The Master of Engineering in Electrical Engineering (MEngEE) is a professional degree offered under the OSU Graduate College Professional Path (Plan II). It is intended for students who wish to enhance their professional qualifications for an enhanced engineering career in the workforce. The degree requires 33 graduate credit hours.

Students in the MEngEE program **are required** to take courses in at least four areas of ECEN at the 5000 level (designated by second digit of the course number) or above. The degree program requirements are summarized in the following table:

		MEngEE (33 hrs.)
ECEN GRADUATE LEVEL COURSES	24 hours	
ADDITIONAL GRADUATE LEVEL COURSES	9 hours	

Additional MEngEE Degree Requirements:

- A. ADDITIONAL COURSES may include non-ECEN, math, science, or engineering graduate-level courses *with approval* of the student's graduate advisory committee.
- B. Students will prepare a poster presentation documenting a major design project performed in coursework during the MEngEE program. The presentation will be given to the ECE Graduate Assessment Committee during the last week of the semester.
- C. Students MUST take any remedial courses at the first enrollment opportunity after entrance into the MEngEE program. Remedial courses are by definition courses that are not approved for graduate credit. Such courses may not be included in the MEngEE Plan of Study.
- D. Up to nine (9) credit hours of ECEN 5080 may be included on the MEngEE Plan of Study. (ECEN 4xxx courses approved for graduate credit completed in the Spring 2020 semester or earlier are equivalent to ECEN 5080 in the Plan of Study.)
- E. A maximum of three credit hours of ECE 5070 may be included on a Plan of Study with approval of the advisory committee.
- F. ECEN 5000, ECEN 5030, ECEN 6000, ECEN 6050, and ENGL 5693 may not be applied to the MEngEE Plan of Study.
- G. Students who do not have a BSEE or BSCpE degree **MAY** include **only one** "outside" ECEN course on their MEngEE Plan of Study. The "outside" course must be approved for graduate credit and must be in math, science, or engineering topics.

Entrance Requirements:

- A. 3.0 GPA in an accredited BSEE or BSCpE program is the standard for admission to the MEngEE program. However, applicants with lower GPA **may be granted** probationary admission. Students who have bachelor's degrees in other engineering fields **may be**

admitted to the MEngEE program, **subject to** the same GPA requirements. These candidates will be expected to take enough prerequisite courses (from undergraduate ECEN courses, and perhaps some courses in Mathematics, Computer Science and/or Physics) to accomplish two ends: (a) to assure a reasonable basis for success in the graduate courses associated with the MEngEE degree; and, (b) to assure that when the candidate enters the workforce with the MEngEE degree, there will be no potential deficiencies in the candidate's technical background. This may require some prerequisite courses in areas of study in which the student has little interest and in which he/she has no intention of practicing after graduation. Students are sometimes admitted to an MEngEE program with a grade of "C" in one or two junior- or senior-level courses. Students **may be required**, as a condition of admission to the MEngEE, program to repeat such courses, or take another undergraduate-level course in the same or closely related area of study. A grade of "B" **MUST** be attained for such prescribed prerequisite courses.

- B.** Students admitted unconditionally to the program are assumed competent to take the required MEngEE courses. If the student feels unprepared for one of the required classes, he/she may enroll in the appropriate prerequisite courses.
- C.** Students admitted conditionally should enroll in the necessary undergraduate prerequisite courses as a first priority. Graduate courses may be taken concurrently with prerequisite courses in other areas. Students need not necessarily complete all prerequisite courses before taking the first 5000-level courses.
- D.** Note: The aforementioned prerequisite courses do not count towards the degree requirements of the MEngEE degree. That is, these prerequisite courses are not listed in the Plan of Study.
- E.** The School of Electrical and Computer Engineering **waives** the foreign-language requirement for MEngEE degree.

Graduate record examination:

Scores for the Graduate Record Examination (GRE) general exam must be submitted with the application. Applicants scoring 153 and higher on the verbal section and 155 and higher on the quantitative section of the GRE have proven to be competitive within the ECE graduate program.

Retention standards:

The Graduate College bulletin sets forth certain minimum grade standards for retention: **The School of Electrical and Computer Engineering expects all candidates to attain grades of "B" or better in all courses taken as graduate students, whether prerequisite courses or courses listed as part of the Plan of Study. A grade below "B" in a prerequisite course is cause for suspension. A grade below "C", or more than two (2) "C's" in graduate courses will result in suspension. A GPA of 3.0 or above in graduate courses must be maintained.**

A preliminary **Plan of Study** for the MEngEE degree should be worked out by the student and with his/her advisor. This plan should include a listing of course work and an estimate of the time schedule. **The initiative for proposing a Plan of Study lies with the student.** The Graduate College requires that a MEngEE Plan of Study be filed **BEFORE** the student registers for his/her

17th hour of graduate credit. The approval of the student's advisor and two other faculty members as well as that of the Dean of the Graduate College is required for all MEngEE Plans of Study.

Plans of Study may be revised from time to time; the revision is accomplished by submitting a new plan as outlined above. **The Graduate College REQUIRES that the final plan be filed before registration for the semester in which the necessary work for the degree will be completed.**

"4+1" Accelerated Master of Engineering

Students admitted to the ECE "4+1" accelerated Master of Engineering program may apply up to nine (9) credit hours that have been applied to an OSU BSEE or BSCpE degree Plan of Study to the MEngEE Plan of Study. Such students will require an additional 24 hours of graduate course work. Students may apply to the accelerated Master's program at any time after the completion of 90 credit hours toward the BS degree. The dual-credit hours must be ECE courses approved for graduate ECE credit and the student must have earned an "A" or "B" in each dual-credit course. All other admission and degree requirements must be met.

MASTER OF SCIENCE DEGREE:

The Master of Science in Electrical Engineering (MSEE) degree is an academic, research-based degree offered under the OSU Graduate College Traditional Path (Plan I) including a thesis. It is intended for students who wish to make fundamental contributions to the understanding and practice of engineering science and techniques. It is also intended to prepare students for the Ph.D. program. The degree requires 30 hours of graduate-level credit, including 6 hours of Thesis credit.

Students in the MSEE degree program **are required** to take courses in at least two areas of ECEN at the 5000 level (designated by the second digit of course number) or above. A summary of the degree requirements is given in the following table:

		MSEE (30 hrs.)
ECEN GRADUATE LEVEL COURSES	21 hours	
ADDITIONAL GRADUATE LEVEL COURSE	3 hours	
THESIS	6 hours	

Additional MSEE Degree Requirements:

- A. The ADDITIONAL COURSE may include a non-ECEN, math, science, or engineering graduate-level course *with approval* of the student's graduate advisory committee.
- B. Up to three (3) credit hours of ECEN 5070 and six (6) credit hours of ECEN 5080 may be included on the MSEE Plan of Study with approval of the advisory committee. (ECEN 4xxx courses approved for graduate credit completed in the Spring 2020 semester or earlier are equivalent to ECEN 5080 in the Plan of Study.)
- C. An MSEE Plan of Study must include exactly six (6) hours of ECEN 5000 (Thesis).
- D. ECEN 5030, ECEN 6000, ECEN 6050, and ENGL 5693 may not be applied to an MSEE Plan of Study.
- E. Students **MUST** take any remedial courses at the first enrollment opportunity after entrance into the MSEE program. Remedial courses are by definition courses that are not approved for graduate credit. Such courses may not be included in the MSEE Plan of Study.
- F. No course required for the BSEE or BSCpE degree at OSU may appear on the MSEE Plan of Study.
- G. No OSU course equivalent to a course applied to a Bachelor's degree at OSU or another institution may be included on the MSEE Plan of Study.

Entrance Requirements:

- A. 3.0 GPA in an accredited BSEE or BSCpE program is the standard for admission to the MSEE program. However, applicants with lower GPA **may be granted** probationary admission. Students who have BS degrees in other engineering fields **may be admitted** to

the MSEE program, **subject to** the same GPA requirements. These candidates will be expected to take enough prerequisite courses (from undergraduate ECEN courses, and perhaps some courses in Mathematics, Computer Science and/or Physics) to accomplish two ends: (a) to assure a reasonable basis for success in the graduate courses associated with the MSEE degree; and, (b) to assure that when the candidate enters the workforce with the MSEE degree, there will be no potential deficiencies in the candidate's technical background. This may well require some prerequisite courses in areas of study in which the student has little interest and in which he/she has no intention of practicing after graduation. Students are sometimes admitted to an MSEE program with a grade of "C" in one or two junior- or senior-level courses. Students **may be required**, as a condition of admission to the MSEE program to repeat such courses, or take another undergraduate-level course in the same or closely related area of study. A grade of "B" or better **MUST** be attained for such prescribed prerequisite courses.

- B.** Students admitted unconditionally to the program are assumed competent to take the required MSEE courses. If the student feels unprepared for one of the required classes, he/she may enroll in the appropriate prerequisite courses.
- C.** Students admitted conditionally should enroll in the necessary undergraduate prerequisite courses as a first priority. Graduate courses may be taken concurrently with prerequisite courses in other areas. Students need not necessarily complete all prerequisite courses before taking the first 5000-level courses.
- D.** Note: The aforementioned prerequisite courses do not count towards the degree requirements of the MSEE degree. That is, these prerequisite courses are not listed in the Plan of Study.
- E.** The School of Electrical and Computer Engineering **waives** the foreign-language requirement for MSEE degree.

Graduate Record Examination:

Scores for the Graduate Record Examination (GRE) general exam must be submitted with the application. Applicants scoring 153 and higher on the verbal section and 155 and higher on the quantitative section of the GRE have proven to be competitive within the ECE graduate program.

Retention Standards:

The Graduate College bulletin sets forth certain minimum grade standards for retention: **The School of Electrical and Computer Engineering expects all candidates to attain grades of "B" or better in all courses taken as graduate students, whether prerequisite courses or courses listed as part of the Plan of Study. A grade below "B" in a prerequisite course is cause for suspension. A grade below "C", or more than two (2) "C's" in graduate courses will result in suspension. A GPA of 3.0 or above in graduate courses must be maintained.**

A preliminary **Plan of Study** for the MSEE degree should be worked out by the student and with his/her advisor. This plan should include a listing of course work and an estimate of the time schedule. **The initiative for proposing a Plan of Study lies with the student.** The Graduate College requires that a MSEE Plan of Study be filed **BEFORE** the student registers for his/her

17th hour of graduate credit. The approval of the student's advisor and two other faculty members as well as that of the Dean of the Graduate College is required for all MSEE Plans of Study.

Plans of Study may be revised from time to time; the revision is accomplished by submitting a new plan as outlined above. **The Graduate College REQUIRES that the final plan be filed before registration for the semester in which the necessary work for the degree will be completed.**

THESIS DEFENSE:

A candidate for the Master of Science degree is required to give an oral defense covering his/her thesis. The thesis and defense will be evaluated by the student's advisory committee consisting of the thesis advisor and two other ECE faculty members.

DOCTOR OF PHILOSOPHY DEGREE:

The Doctor of Philosophy (Ph.D.) Degree in Electrical Engineering is an academic, research-based degree for students who wish to advance the state-of-the-art in engineering science and technology through fundamental research. The Ph.D. degree prepares students for careers in academic, government, and industrial research.

Students who have filed notice with the Graduate College of intention to become a candidate for the Ph.D. Degree in Electrical Engineering will need an advisory committee. This committee will be chaired by a member of the Faculty of the School of Electrical and Computer Engineering and will include at least two additional ECE faculty, and should have representation of at least one other department in which the student contemplates taking course(s).

If a student already enrolled as a candidate for the MSEE degree wishes to file notice to become a candidate for the Ph.D. degree, he/she should petition the Graduate College to designate his/her advisor for the Master's program as his/her temporary Ph.D. advisor in order to preserve continuity in his/her program.

The minimum requirement for the Doctoral Degree is 73 credit-hours beyond a Bachelor's Degree. This includes credit for the dissertation. This requirement may, however, be increased at the discretion of the student's advisory committee. The degree requirements beyond the Bachelor's degree are summarized in the table below:

		PhD (73 hrs.)
LECTURE COURSES	33 hours	
ECEN 6050 Prelim. PhD Research & Proposal	3 hours	
ECEN 6001 PhD Seminar Series	1 hour	
ECEN 6000 Dissertation Research	30 hours	
ADDITIONAL GRADUATE LEVEL COURSES	6 hours	

Additional PhDEE Degree Requirements:

- A. LECTURE COURSES excludes ECEN 5000 and ECEN 6000 (or equivalents).
- B. ADDITIONAL GRADUATE LEVEL COURSES may include lecture courses, Masters thesis (ECEN 5000 or equivalent), and/or dissertation research hours as approved by the student's graduate advisory committee.
- C. A maximum of 36 ECEN 6000 Dissertation Research hours may be applied to the PhD plan of study.
- D. A maximum of six (6) Master's thesis hours (ECEN 5000 or equivalent) may be applied to the PhD plan of study.

- E. A maximum of 30 credit hours applied to a Master's plan of study may be applied to the PhD plan of study with approval of the advisory committee (i.e., 24 CH applied to LECTURE COURSES and 6 CH applied to ADDITIONAL GRADUATE LEVEL COURSES).
- F. Up to six (6) hours of ECEN 5070 Directed Studies and up to six (6) hours of ECEN 5080 may be included toward the Lecture Courses requirement with approval of the advisory committee. (ECEN 4xxx courses approved for graduate credit completed in the Spring 2020 semester or earlier are equivalent to ECEN 5080 in the Plan of Study.)
- G. ECEN 5030 and ENGL 5693 may not be applied to the PhD Plan of Study.
- H. The advisory committee may add additional credit hour requirements as appropriate.

The contents of an approved Plan of Study will be determined by the student and his/her advisory committee. Normally, the student will take all of the courses offered in at least the sequence of specialized graduate work embracing the field of interest in which he/she proposes to conduct research.

A sufficient concentration of subjects offered by one of the other departments of the Graduate College may be accepted as a minor if the faculty of the department involved is represented on the student's advisory committee.

The School of Electrical and Computer Engineering waives the foreign-language requirement for the Ph.D. Degree.

A student may apply for candidacy for the Ph.D. degree upon completing 30 credit-hours beyond the Master's degree or 60 credit-hours beyond the Bachelor's degree.

Milestones:

Initial Assessment Examination (ECEN 6050): ECEN 6050, Preliminary Research and Proposal, will be used to evaluate the student's ability to perform independent research on an advanced topic. Note that the research should be *independent*, but it is not necessarily *original* research. The student will provide his/her Ph.D. committee with a document that details his/her research (two weeks before the presentation). In the presentation, the student will summarize his/her research in an oral presentation to the advisory committee and make a recommendation on how the current state-of-the-art might be extended through novel research. Students will receive minimal guidance from the advisor during the preparation of the 6050 document. The submitted document and oral presentation must primarily reflect the student's own work. Students who enter the Ph.D. program with a Master's degree must enroll in ECEN 6050 in their first semester of study. Students who enter the Ph.D. program with a Bachelor's degree must enroll in ECEN 6050 in the semester in which they will complete 24 credit hours toward the Ph.D. The oral examination must be taken prior to beginning the semester following the semester of enrollment. The advisory committee has the option of assigning an incomplete grade in ECEN 6050 to students who do not successfully pass the examination on the initial attempt. In this case, the student must repeat and pass the examination prior to the completion of the semester following the semester of enrollment.

Ph.D. Seminar Series: Students must enroll in ECEN 6001 PhD Seminar Series at the first opportunity after beginning their PhD study.

Plan of Study: An initial Plan of Study must be submitted to the Graduate College prior the completion of the second semester of enrollment. The procedure for submitting the Plan of Study is outlined at <http://gradcollege.okstate.edu/planofstudy>.

Candidacy for Degree: A student should apply for candidacy for the Ph.D. degree per OSU Graduate College requirements upon completing 30 credit-hours after the MSEE Degree or 60 credit-hours after the Bachelor's degree. The School of Electrical and Computer Engineering requirements for candidacy consist of an initial dissertation proposal in the form of a written outline that has been approved by the Doctoral Committee.

Final Dissertation Proposal Defense: The School of Electrical and Computer Engineering requires that a final written dissertation proposal be submitted to the student's advisory committee and defended orally before the committee. It will be evaluated by the advisory committee to judge the candidate's progress toward the dissertation degree requirement and to assess the student's ability to present and defend the results of original research. The proposal and defense will not be used to explore the candidate's comprehension of course work not related to his or her research investigation. The Ph.D. candidate is expected to participate in published scholarship. At the time of the proposal defense the student must have (at least) submitted a paper on his/her research for publication in a peer-reviewed conference or journal. Any deficiencies that may have been uncovered in this report **MUST** have been rectified before a candidate can be permitted to defend the final dissertation. The Final Dissertation Proposal Defense must be successfully completed at least six months prior to the final dissertation defense.

Dissertation Defense: The final thesis examination will be conducted to judge the candidate's ability to present and defend the results of original research. Although referred to in the Graduate Catalog as the "final" examination, this examination will not be used to explore the candidate's comprehension of course work not related to his research investigation. At the time of this final examination, the student must have (at least) submitted a journal paper on his/her research. Any deficiencies that may have been uncovered in previous examinations **MUST** have been rectified before a candidate can be permitted to take his/her thesis examination.