



LEHIGH UNIVERSITY®

Electrical & Computer Engineering

Graduate Student Handbook

2025-2026

**P.C. Rossin College of
Engineering and Applied Science**

(August 2025)

Greetings from the Department Chair

Dear ECE Graduate Students,

Welcome to Lehigh University and to the Department of Electrical and Computer Engineering! On behalf of our faculty and staff, we are delighted to have you join our dynamic and diverse academic community.

You are also becoming part of a proud and historic legacy. Lehigh's Electrical Engineering program is one of the earliest in the United States, dating back to the very birth of electrical engineering as a profession. Established in 1883 as a one-year program of advanced study, it was expanded in 1886 into a comprehensive four-year curriculum. You are joining one of the pioneering electrical engineering departments in the world—a department with a long-standing tradition of excellence and innovation.

Our department is proud of its strong record in research, innovation, and education. As you begin your graduate journey, we are confident that your time here will be both intellectually stimulating and personally rewarding. We encourage you to engage deeply with our exceptional faculty, collaborate with your peers, and take full advantage of the opportunities available to broaden and deepen your knowledge.

Pursuing a graduate degree is a significant and meaningful investment in your future. It not only enhances your technical expertise, but also fosters critical thinking, creativity, and leadership—skills essential for addressing complex challenges and advancing your career in today's fast-evolving technological landscape. More than just academic training, graduate education instills a mindset of inquiry and innovation that prepares you to lead and contribute meaningfully in your field.

We also believe that learning is a lifelong endeavor. In a world shaped by constant change, the ability to adapt, grow, and stay curious is vital. We encourage you to view your time at Lehigh not as a final chapter, but as the foundation of a lifelong commitment to personal and professional growth.

To support your graduate experience, we've prepared the 2024–2025 ECE Department Graduate Handbook. This resource complements the [College of Engineering and Applied Science Graduate Student Handbook](#), and both should be used together to understand academic policies, procedures, and program requirements. We also recommend consulting the [University Catalog](#) for additional guidance.

We are excited to support you on this journey and look forward to seeing all that you will accomplish.

Welcome once again to Lehigh—and to the ECE family!

Warm regards,

A handwritten signature in black ink, reading "Svetlana Tatic-Lucic". The signature is written in a cursive, flowing style.

Prof. Svetlana Tatic-Lucic

Professor and Chair

Department of Electrical and Computer Engineering

Lehigh University

Introduction



Contacts:

Graduate students may seek assistance from:

Department of Electrical and Computer Engineering

Department Chair - Prof. Svetlana Tatic-Lucic (svt2@lehigh.edu, 610-758-4023)

Director of Graduate Studies - Prof. Wenxin Liu (wel814@lehigh.edu, 610-758-6079)

Graduate Coordinator – Ms. Lucy Waldman (xlw224@lehigh.edu, 610-758-4072)

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Business Manager, Mr. Jeff Nichols (jfn298@lehigh.edu, 610-758-3863)

P.C. Rossin College Graduate Personnel

Assoc. Dean for Graduate Education - Prof. Mark Snyder (Masn00@lehigh.edu, 610-758-6834)

Manager of Graduate Program - Ms. Brianne Lisk (brc2@lehigh.edu, 610-758-6310)

Important Resources

Graduate Student Life — <https://grad.lehigh.edu/student-life>

Office of International Students and Scholars (OISS) — <https://global.lehigh.edu/oiss>

Registration and Academic Services (RAS) — <https://ras.lehigh.edu/current-students>

RAS Academic Calendar — <https://ras.lehigh.edu/content/current-students/academic-calendar>

Bursar — <https://financeadmin.lehigh.edu/bursar>

Useful Abbreviations

ECE	Electrical and Computer Engineering
MS	Master of Science
MENG	Master of Engineering
PhD	Doctor of Philosophy
EE	Electrical Engineering
CPE	Computer Engineering

CSE	Computer Science and Engineering
ESLP	English as Second Language Program
OPI	Oral Proficiency Interview
TOPSS	Test of Pedagogical Speaking Skills
RCEAS	P.C. Rossin College of Engineering & Applied Science
OISS	Office of International Students and Scholars
ICAPE	International Center for Academic and Professional English

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PART ONE: PROCECURES FOR NEW AND CURRENT GRADUATE STUDENTS

1.1 Check in and Starting dates

Students are expected to be on campus at least one week prior to the start of classes in time for new student orientations, testing and registration. International students must check in online with OISS through their iHome portal when arriving on campus. The OISS is located in Coxe Hall if you need to see them in person. Enrollment closes after 10 days of the first days of the semester. University Academic Calendar can be found [here](#).

1.2 Required Orientations

1. [Graduate Students Orientation](#) - for all new graduate students
2. [OISS Orientation](#) - for all new international students
3. ECE Department Orientation – for all new graduate students
4. [TOPSS Testing](#) - a test of English proficiency (PhD students & Master's students working as teaching assistants)
5. Lab Safety Training (part of University Orientations)

Failure to attend the above sessions will result in not being able to enter lab areas nor will you be permitted to serve as a departmental teaching assistant. Registration must be done online through the Graduate Student Life site at: <https://grad.lehigh.edu/>

1.3 English Speaking

Spoken English is the expected language in all labs and classrooms. All students MUST Speak English in the laboratory environment for safety reasons. Any student violating this requirement will be given a warning and a notice will be sent to their advisor. A second offense may result in expulsion from the laboratory and a meeting among the Safety Officer, student, and laboratory supervisor will be held to correct the problem.

1.4 Health Insurance

University policy requires ALL resident graduate students to have health insurance. For 2025-2026, the annual premium for student only coverage is \$2,745. To help eligible students afford individual coverage, the University will provide a subsidy of \$2,196 approximately towards the total annual insurance premium for students receiving assistantships and fellowships through Lehigh's Payroll Office.

Health insurance premium rate increases slightly every year. For most updated rate and detailed health insurance plan, please check [here](#).

1.5 Course Selection & Registration

All current students are asked to register for their semester courses at a specified date during the previous semester. Failure to do so will result in a late fee of \$100 assessed by the Registrar. (January 2 for spring classes and August 1 for fall classes).

All students will have the first week of classes to add and drop courses online through their registration portal as they wish without penalty. You may also add and drop the second week of classes, but you must get approval from the instructor, get an override

applied, and will receive a [pro-rated charge](#) for that course from the Bursar's Office for the time that you attended.

Registration link is [here](#).

1.6 Advisors

All students are required to consult with their academic advisor before they register for courses each semester. The advisor will review the courses and provide the student with their registration PIN#. New registration PIN numbers are assigned each semester.

New Masters graduate students will be assigned an advisor prior to the start of the semester. **Students may request to switch to a different academic advisor upon approval.**

If a Masters student decides to submit a thesis as part of their program, they will need to identify a faculty member who is willing to supervise their research, and that faculty member will become their academic advisor as well. The thesis advisor could become the academic advisor from this point. The student is responsible to contact both advisers and notify the department office regarding the change. Please be advised that our faculty have many commitments, and the availability of faculty for research supervision is not guaranteed.

1.7 Seminars

Please note that all full time graduate students in the department are expected to attend department seminars. Seminar announcements are sent to your Lehigh e-mail accounts. Seminars are generally scheduled at 4:30 pm.

Full time students are expected to attend at least 75% of all the department seminars offered in a semester. Attendance will be taken.

1.8 Full-Time Certification

All International graduate students must maintain full-time status while attending Lehigh. Full-time students must be registered for 9 credits (3 courses) each semester or satisfy the requirements to be certified full-time. All PhD students that are in Candidacy and taking one credit, need to be certified Full Time. If you need to be certified full-time, please complete the [Full-Time Certification Form through DocuSign](#). Domestic students who need to maintain full-time status for insurance purposes, etc. must also be registered for 9 credits per semester or be full-time certified. All RAs and TAs must be full-time students as stated in your offer letter. Failure to do so will make you ineligible for any assistantships.

During the summer semesters, students do not need to take courses unless summer is the beginning semester, in which case, the students have to register for 6 credits of courses to be considered as full-time.

1.9 Graduation

When a student is ready to graduate, you will need to complete an Application for Degree

form at the beginning of the semester. These forms are available online through the student portal. To access the form, log on to the Portal, click the Banner Icon, and click the Student Services tab. Applications must be submitted by the deadlines listed on the [RAS Academic Calendar](#). Once this form is complete, please notify the Graduate Coordinator of your plan.

Master's students also need to complete the [Master's Program Form](#) through DocuSign to have all the courses checked and signed to qualify for graduation.

1.10 Department Representative to Graduate Student Senate

Every year, one graduate student and one alternate is appointed to serve as the ECE Unit Representatives to the Lehigh University Graduate Student Senate. The one-year appointment, beginning in the Fall semester of a given academic year, is overseen by the ECE Graduate Coordinator and may be extended for one extra term (for a total of two years). Important information from the biweekly Lehigh University Graduate Student Senate meetings should be relayed to the ECE Graduate Coordinator, ECE Faculty and the ECE graduate students as deemed necessary by the representatives.

1.11 Graduate Student Service to the Department

Throughout the year there are many events in which a graduate student can provide service and assistance to the department. These events include but are not limited to: Family Weekend, Candidates Day Tours, Admission Events, and ad hoc tours of our facilities.

Each student is expected to participate in at least five (5) hours of department service a year. These opportunities not only play an important part in the success of these events, but also afford the student many opportunities to interact with Faculty, Staff, other students, prospective new students, and external visitors. It also plays an integral part in Professional Development, as it entails learning to interrelate with the community at large, and can be used to enhance your resume.

PART TWO: MASTER'S DEGREE GUIDELINES

The ECE Department offers the following degrees:

- a) Master of Science in Electrical Engineering (MS in EE)
- b) Master of Engineering in Electrical Engineering (MENG in EE)
- c) Master of Science in Computer Engineering (MS in CpE)
- d) Master of Engineering in Computer Engineering (MENG in CpE)
- e) Master of Science in Photonics (MS in Photonics)

2.1 Degree Requirements:

- **Program Timeline Requirement:** Normal full-time duration for an MS degree is 1.5 to 2 years; however, all work must be completed within a maximum of 6 years.

- **Credit Requirement:**

The University requirements specify that a Master's degree must include:

- At least two full semesters of advanced work
- At least 30 credits
- At least 24 credits of 300- and 400-level courses
- At least 18 credits of 400-level courses
- At least 18 credits in the major field.
- At least 15 credits of 400-level courses in the major field

Major field courses for EE students are ECE courses; major field courses for CpE students are ECE and CSE courses.

Master's degrees may include:

- Courses at the 300-level and higher in the major field
- Up to six credits of thesis (ECE 490) or independent study (ECE 492)
- Courses at the 200-level and higher outside the major field (no more than two courses) must get approval prior to registration.

400 Level Course Requirement: When a course is cross listed at both 300 and 400 levels, the graduate student must enroll in the 400 level course.

- **Core Courses Requirement:**

MS/MENG Electrical Engineering (EE) Core Courses (select 3 courses from this list below)

- ECE 401 Advanced Computer Architecture
- ECE 402 Advanced Electromagnetics
- ECE 420 Advanced Circuits and Systems
- ECE 441 Fundamentals of Wireless Communications
- OR—
- ECE 414 Statistical Decision Making and Machine Learning Theory
- ECE 451 Physics of Semiconductor Devices

MS/MENG Computer Engineering (CpE) Core Courses (select 3 from this list below)

1. ECE 319 Digital System Design
- OR—
- ECE 363 Computer-Aided Design of Digital Systems
2. ECE 401 Advanced Computer Architecture
3. CSE 303 Operating System Design
- OR—
- CSE 403 Advanced Operating Systems
- OR—
- CSE 340 Design and Analysis of Algorithms

—OR—
CSE 440 Advanced Algorithms

Master of Science Degree in Photonics

The Master of Science Degree in Photonics is an interdisciplinary program designed to provide students with a broad training in the various aspects of photonics, including topics in electrical engineering, materials science, and physics. Admission to the program requires a B.S. or M.S. in either the engineering or physical sciences.

Applications should be directed to one of the three sponsoring departments (Electrical and Computer Engineering, Materials Science and Engineering, or Physics). Procedures and admission criteria are the same as those followed by the home department.

Required Courses* (15 credits):

- PHY 355 (3 Credits) - Nonlinear Optics
- ECE 448 (3 Credits) - Fundamentals of Photonics (or PHY 421, Elec & Magnetism I)
- ECE 451 (3 Credits) - Physics of Semiconductor Devices (or PHY 363, Physics of Solids)
- ECE 450 (3 Credits) - Applied Quantum Mechanics for Engineers (or PHY 423: Advanced Quantum Mechanics I)
- PHY 396 or MAT 416 (3 Credits) - Optical Properties of Solids / Optical Properties of Materials

Selected pre-requisites for the required courses may be waived by the program director for students with equivalent background.

Elective courses (select a minimum of three courses):

- ECE 402 (3 Credits) - Advanced Electromagnetics
- ECE 450 (3 Credits) - Introduction to Photovoltaic Energy Systems
- MAT 302 (3 Credits)- Electronic Properties of Materials
- MAT 334 (4 Credits)- Electron Microscopy & Microanalysis
- MAT 427 (4 Credits)- Advanced Scanning Electron Microscopy
- MAT 333 (3 Credits)- Crystallography and Diffractions
- PHY 422 (3 Credits) - Elec & Magnetism II
- PHY 424 (3 Credits) - Quantum Mechanics II
- PHY 446 (3 Credits) - Atomic and Molecular Physics
- PHY 318 (3 Credits) - Computational Physics
- PHY 352 (3 Credits) - Modern Optics (or PHY 482, Applied Optics)

In order to complete the MS degree requirements of the University, candidates must take 30 credits. Upon request, It is possible to satisfy this requirement via either a Master's thesis or a report, and by enrolling in a thesis or independent course for up to 6 credit hours. The decision on a thesis or report should be made in consultation with a research advisor, and Thesis or independent study courses should be at the 400 level.

A digital copy of the Photonics degree requirement can be found here:
<https://wordpress.lehigh.edu/cpn/education/>

- **Grades Requirement:** a student will be ineligible for a Master's Degree if a graduate student accumulates more than four grades below B-. In addition, no credit is counted towards a degree for grades below C for 400-level courses and B- for 300-level courses
- **Core Course Grades Requirement:** For ECE Department Graduate Program Master's Degrees, students must earn grades "B-" and above to fulfill the core courses requirement.

2.2 Master's S Program Options: There are two options for a student enrolled in the MS degree program: 1) Coursework-Only Option; 2) Thesis option.

Option 1: Coursework-Only Option

Should an MS student elect to pursue the coursework-only option during their MS/MENG in EE degree program, they must complete the program's credit, grade and core course requirement as stipulated in Section 2.1

Option 2: Thesis Option

Should an MS student elect to complete a thesis project during their MS in EE/CpE degree program, they must complete the program's three core courses and identify a research advisor, who would provide academic guidance in conducting the thesis project and provide additional support for the student's overall professional development.

MENG students do not have the option to do a thesis.

If a student chooses to do a thesis, he/she could take up to 6 credits of thesis hours in place of 2 courses. Theses must be approved by the Department Chair and submitted to the Registrar by the set deadline which can be found on the Academic Calendar. Thesis and Dissertation Guidelines are [here](#).

If an MS student has completed all course and credit requirements for the degree but is finishing up their thesis project, they should register for 1 credit of ENGR 490 Thesis in order to maintain their candidacy for the degree only once for the last semester. International students also need to submit a [Full Time Certification Form](#) to be eligible as a legal full time student for that semester.

2.3 Graduation Guidelines for MS Programs:

In the last semester students need to submit the following paperwork to the Graduate Coordinator in the ECE Department or online when specified:

Forms	Due Date	Special Notes
Application for Degree - online in your Banner account	January Graduation: 10/1, May Graduation 3/1, August Graduation 7/1	
Master's program form	By the beginning of the last term. This can be submitted as early as 15 credits. It MUST be processed before the last term ends.	
Submission of Thesis Electronically: http://www.etdadmin.com/lehigh Original signature sheet signed by ALL committee members	Must be done by designated deadlines set by the Registrar's Office Must be done by designated deadlines set by the Registrar's Office	For MS students completing Thesis only
Seminars	All seminar requirements must be completed as outlined in section 1.7 of this handbook	Full-time students only

PART THREE: DOCTORAL DEGREE GUIDELINES

3.1 Time Requirement:

A PhD candidate is generally expected to devote three or more academic years to graduate study. In no case is the degree awarded to one who has spent less than two full academic years of graduate work. Graduate work done in residence at another institution may be accepted in partial fulfillment of the time requirement. All work submitted in a program for the PhD degree must be completed within a 10-year period. A candidate entering a doctoral program with a master's degree after an interruption of at least one semester must complete all work toward the PHD within seven years.

3.2 Credit Requirement

Doctoral students who are admitted with a Bachelor's degree must register for a minimum of 72 credits. Students who earned a Master's degree from Lehigh University must register for a minimum of 42 credits towards the PhD degree. Students who have earned a Master's degree at another institution must register for a minimum of 48 credits.

Please note a PhD candidate cannot take more than nine (9) credits of Independent Study (ECE 492) courses in the first two years since the start of the program.

3.3 TA Requirement

All PhD candidates are required to serve as a half or full Teaching Assistant (TA) for a minimum of one (1) semester in a technical course within the department during their PhD studies. This includes any technical course taught by a faculty member in the ECE Department. This is a departmental requirement for graduation. A student for whom English is not their first language needs to pass the TOPSS (or OPI) test administered by ICAPE in order to be a TA.

A score of 3.5 or higher on the TOPPS test is a graduation requirement of this department that applies to students for whom English is their second language. Information on the TOPPS test can be found on the [TOPSS program website](#). If the student receives a score below 3.5, then the student must continue with English as a Second Language (ESL) courses and/or seek tutoring (to be determined by the International Center for Academic and Professional English - ICAPE Office) until a passing score (≥ 3.5) is obtained. Failure to pass the TOPSS test (score ≥ 3.5) within the two-year time limit may result in denial of degree, loss of support and/or ineligibility for funding. The Department will cover the TOPPS testing fee for the first try (must be taken by the end of the first semester on campus). Graduate students with scores below 3.5 must personally pay for all re-examinations, ESL courses and tutoring until a score of ≥ 3.5 is obtained.

OPI – Oral Proficiency Interview is a 30-minute interview that serves an alternative to TOPSS for some students/faculty/staff. The minimum score is 3.5.

3.4 Core Course Requirement

The requirements are the same as those for Master's students (see page 10)

3.5 Performance Requirement

Same as the Master's program requirements, except for Grades lower than C- will not count towards the degree

3.6 Road Map to Graduation

Step 1: Qualifier Exam

All students in the Ph.D. program must take the appropriate Qualifier Exam within two (2) years of entrance into the program, preferably within their first year. If a student is unable to fulfill this obligation, the Graduate Coordinator will need to be notified. This exam requires demonstration of competency in selected areas.

EE Qualifier exams offered in six (6) different areas:

- Bio Electronics and Bio Photonics
- Communications, Signal Processing and Networking
- Nano Electronics and MEMS
- Optoelectronics and Photonics Systems
- Power Systems and Power Electronics
- Computer Architecture and VLSI Design

CompE Qualifier Exam:

Computer Engineering Ph.D. students may take their qualifier in areas more

specific to their research as long as they have three faculty members in either the Electrical & Computer Engineering Department or Computer Science & Engineering Department agree to form a committee to offer the specific exam.

Most areas have an assigned faculty member who will oversee the examination and communicate with those students signed up for the exam. Exams will typically consist of reading assigned research papers, writing a response paper, and taking an oral exam with the examining committee. The Examining Committee will consist of at least three faculty members. The topics can be related to one's research thrust, but not identical to the thesis topic.

Students will have two weeks to complete the written paper and an oral examination will follow one week after the paper is submitted.

Grading of the Qualifying Exam

The exam is on a pass/fail basis. Students who do not pass the exam the first time will be able to take the exam again after a 5- month waiting period. This will be organized with the help of the Graduate Coordinator and the Qualifier Committee on an individual basis. If a student fails to retake the Qualifier Exam within a 12- month period, that student will be removed from the PhD program, and will be forced to reapply. If a student does not pass after the second attempt, they will be unable to continue in the PhD program.

Step 2: Admission to Candidacy

After a Ph.D. student has passed his/her Qualifier Exam he/she may begin preparing to apply for Candidacy. The Doctoral Committee comprised of a minimum of 4 members. Further guidelines on the formation and membership of this committee can be found in the [College Requirement](#). An information packet on the candidacy application process is available from the Manager of Graduate Programs in RCEAS and must be completed and submitted two (2) weeks prior to the start of the semester in August or January. A prospective candidate must submit a written program proposal to their **Doctoral Committee** that includes a discussion of proposed dissertation research. Once the Committee approves the proposal, the candidate submits the proposal along with a completed signature page and the Application to Candidacy packet to the Manager of Graduate Programs in the College of Engineering. The Dean's office will then notify the student and their committee members in writing of the decision.

Once the student has completed their credit hour requirement for the PhD, they may apply for Maintenance of Candidacy two times per year from that point on. This means that the student is only required to be registered for one (1) credit of Maintenance of Candidacy course (ENGR 499) from that point on until they complete the program.

Step 3: General Exam

The general examination for the doctorate is designed to test both the student's capacity and his or her proficiency in the field of study. The examination is not necessarily confined to the content of courses that have been taken at Lehigh

University or elsewhere. The examination must occur no later than seven months prior to the time when the candidate plans to receive the degree. The student's doctoral committee is in charge of the examination, which may be both written and oral.

Should a candidate fail in the general examination, he or she may be permitted by the doctoral committee to present him or herself for a second examination in the next 5 to 7 months. If the results of the second attempt are also unsatisfactory, no further examination is set and the candidate is judged to have failed.

Step 4: Dissertation and Defense

Ph.D. candidates are required to write a dissertation prepared under the direction of their advisor (also typically the Chair of their Doctoral Committee). Guidelines can be found in the College Handbook and all associated dates are listed on the [Academic Calendar](#).

A print out of guidelines and sample title and signature pages can be obtained from the Manager of Graduate Programs (Ms. Brie Lisk, 314a Packard Laboratory) in RCEAS.

Upon return the draft, the student should distribute copies of the draft to the members of the doctoral committee for review and for suggestions for revision.

The candidate then schedules an oral dissertation defense before the doctoral committee, additional faculty members and the general public. The date of the examination must be announced to the public at least one week in advance.

See Thesis and Dissertation guidelines at the bottom of this web page:
<https://engineering.lehigh.edu/doctor-philosophy-degree-requirements>

* Disclaimer: The ECE Graduate Committee reserves the right to change and explain the above-mentioned rules and guidelines.