ELECTRICAL AND COMPUTER ENGINEERING, M.S.

Saint Louis University's Master of Science in Electrical and Computer Engineering (ECE) boosts career potential, enabling specialization in high-demand fields like quantum science and computing, robotics, power systems, and nanotechnology. It offers advanced technical knowledge, leading to higher salaries, specialized roles, and research opportunities. Graduates can pursue roles such as hardware design engineer, control system engineer, or research scientist.

Curriculum Overview

SLU's Master of Science in Electrical and Computer Engineering is 30 hours in total. The M.S. in electrical and computer engineering allows students to pursue a personalized curriculum that fits their interests and professional goals. The majority of courses will be in the area of emphasis; however, students in consultation with their academic advisor and department graduate coordinator may take limited number of credits from math or other engineering programs. Faculty advisors work closely with students to ensure that the requirements are met and that students are prepared for a career in their chosen field. M.S. ECE students are expected to register and attend zero-credit seminars every semester.

Experiential and Applied Learning

Graduate students in the School of Science and Engineering gain valuable experience working with both faculty and peers. Additional opportunities to publish in scientific journals and attend professional conferences prepare our graduates for careers in industry or academia.

Saint Louis University’s location in a vibrant and industry-rich city means that faculty members have access to and relationships with industry professionals. The School of Science and Engineering provides many opportunities for these professionals to interact with students, share their real-world experiences, network and even collaborate on research projects. Therefore, students have access not only to top-notch faculty but to the most recent developments in industry.

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Students work closely with highly skilled faculty conducting funded research supported by leading national and international agencies, with access to state-of- the-art laboratories and interdisciplinary collaborations in the following areas:

- Quantum science and computing
- Optics and photonics
- Electromagnetics
- Semiconductor technologies
- Nanoscale technologies
- Others

The environment fosters innovation, creativity and transition from consuming knowledge to generating new discoveries.

Careers

Graduates are prepared to enter industry as an engineer in their chosen concentration or conduct research for private or government organizations. Corporations and government agencies where successful M.S. in engineering alumni can be found include:

- AT&T
- Army Corps of Engineers
- Boeing
- Emerson
- Garmin
- Johnson & Johnson
- JPL
- Lockheed Martin
- Medtronic
- NASA
- Northrop Grumman
- Samsung
- State, county and municipal engineering offices
- State Departments of Transportation
- SpaceX
- Texas Instruments
- Thermo-Fisher Scientific
- U.S. Air Force, Navy and Army research centers

Admission Requirements

- Begin your application for this program at https://gradapply.slu.edu/apply/
- Most admitted students have a BS degree in Electrical Engineering, Computer Engineering, or closely related engineering and science disciplines and have a cumulative GPA of at least 2.75.
- The following are to be submitted during application:
  - Application form
  - Transcript(s) from all colleges and universities attended
  - Two letters of recommendation – Applicants with BS degree obtained from SLU in the past three years are required to submit only one reference letter.
  - Resume or curriculum vitae
  - Personal statement of purpose – Up to 2 pages (500 – 1000 words)
  - GRE Scores – Required only for applicants with degrees from non-ABET accredited programs and optional for applicants with degrees from ABET accredited programs. A Quantitative score of 150 or higher is acceptable.

Requirements for International Students

Along with the general admission requirements listed above, the following must be provided by prospective international students:

- Demonstration of English Language Proficiency (https://catalog.slu.edu/academic-policies/office-admission/graduate/english-language-proficiency/) (e.g., TOEFL, IELTS, Duolingo, etc.)
- Proof of financial support that must include:
  - A letter of financial support from the person(s) or sponsoring agency funding the time at SLU.

  - A letter from the sponsor's bank verifying that the funds are available and will be so for the duration of study at SLU.
- English translation of academic records if the BS degree is obtained at an institute outside the United States and the instruction language is not English. Academic record must include the courses taken and/or lectures attended, practical laboratory work, the maximum and minimum grades attainable, the grades earned or the results of all end-of-term examinations, and any honors or degrees received. Academic records must be certified by designated institutions such as World Education Services (WES) and Educational Credential Evaluators (ECE).

Review Process

Applications for the Coursework-only (non-thesis) track will be quickly evaluated, and admission decisions will be communicated to the applicant, usually within two weeks. Students in the Coursework-only track may also transfer to the Research track (with thesis) or Project track (non-thesis) within the first semester if student finds a suitable mentor for their research or project.

Applications for the Research track (with thesis) and Project track (non-thesis) will be sent to the ECE Department for evaluation and an admission decision. Acceptance decisions will be based on ECE faculty expertise and availability of resources. The goal is to ensure a successful match with a faculty member to conduct an MS thesis research or MS project that is aligned with the student's preparation, interest, and career goals. If a student is unable to be successfully paired but meets the program requirements, an option to join as a Coursework-only track student will be available.

In cases where students come from a related engineering background but not from ECE, the applications will be sent to the ECE MS Program Coordinator to review and determine fit and/or pre-requisite/concurrent classes that the applicant would need to take to qualify for the MS program in ECE. Such applicants may receive provisional admission.

Tuition

Tuition	Total Program Cost
MS Electrical and Computer Engineering	$42,000

Additional charges may apply. Other resources are listed below:

Information on Tuition and Fees (https://catalog.slu.edu/academic-policies/student-financial-services/tuition/)

Miscellaneous Fees (https://catalog.slu.edu/academic-policies/student-financial-services/fees/)

Information on Summer Tuition (https://catalog.slu.edu/academic-policies/student-financial-services/tuition-summer-current/)

- All applicants admitted to the M.S. program are expected to fund themselves. Depending on the research needs of the department, limited funding may be available to selective applicants from the department.
- Funding may also be possible through external research grants of individual faculty, typically for students pursuing the M.S. in research track (with thesis) or project track (nonthesis). Students must communicate directly with individual faculty.
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Financial Support

The School of Science and Engineering offers graduate fellowship awards and assistantships each year. Assistantships provide tuition, stipend and health insurance. There are also many opportunities for students to receive funding through external research grants that are managed by individual faculty.

For more information, visit the Office of Student Financial Services (https://slu.edu/financial-aid/).

Learning Outcomes

1. Graduates will be able to independently apply professional, technical, and analytical skills that demonstrate an in-depth understanding of theoretical and practical concepts.
2. Graduates will be able to effectively communicate subject-related concepts and analyses through coursework presentations, reports, and class discussions.
3. Graduates will be able to demonstrate mastery of advanced topics required to solve complex engineering problems through effective written and oral presentations of their research findings and project work.

Requirements

All coursework must be completed with minimum grade of C.

Code	Title	Credits
ECE 5001	Practices in ECE	3
Foundational Courses		**6**
Students should select 6 credits of coursework from the below:		
ECE 5051	Mathematical Methods for Engineers	
ECE 5055	Stochastic Processes	
ECE 5110	Power Systems Analysis I	
ECE 5120	Modern Control Theory	
ECE 5132	Analog Integrated Circuit Design	
ECE 5160	Communication Systems	
ECE 5161	Satellite Communications	
ECE 5170	Energy Technologies I	
ECE 5225	Hardware Software Co-Design	
ECE 5235	Digital IC Design	
ECE 5245X	Computer Networks	
Electrical and Computer Engineering Technical Elective Courses [1]		**21**
Students should select 21 credits of courses with the Electrical and Computer Engineering Graduate Technical Elective attribute or from additional Foundational Courses. Up to 9 credits of courses with the attribute outside of the ECE subject code may be applied to the degree.		
Project Track		
Students who wish to conduct a Project will take 3 credits of ECE 5960 Masters Project.		
Thesis Track		
Students conducting a thesis will take 6 credits of ECE 5990 Masters Thesis Research.		
Total Credits		**30**

[1] There are three options in the MS program: **coursework-only track** (non-thesis), **project track** (non-thesis), and **research track** (with thesis). The duration of the MS program may vary depending on a student's individual academic interests and choice of tracks. Students select their intended track during the application process, but they may change their track after admission with the approval of the ECE MS Program Coordinator. Regardless of which track the student chooses, an ECE MS degree will prepare the student for competitive engineering jobs in industry, research positions in industry and government labs, or doctoral study.

Non-Course Requirements

Required Graduate Seminar: All MS students must attend the Graduate Seminar each semester of the program. Students should attend at least 6 seminar sessions per semester and submit 6 satisfactory reports to complete this requirement.

Project Track: Before the end of the first year in MS program, students in agreement with their project advisor must submit to ECE MS coordinator a project proposal form that states the commitment of the student and the advisor to the project and highlights the title, scope, timeline, and resources available for the successful execution of the project. At the completion of the project, students are required to prepare a written project report that will be examined by a committee and make an oral presentation.

Thesis Track: Before the start of the second semester in MS program, students in agreement with their research advisor must submit to ECE MS coordinator a research proposal. At the completion of the thesis, students will be examined by a committee of three faculty members and make an oral presentation.

Roadmap

This roadmap is just one example of a semester-by-semester plan of study for this program. There are other plans students can and do take. The plan of study for each particular student is established in consultation with each student's academic advisor; *this roadmap does not replace academic advising appointments.*

Roadmap notes:

- This Roadmap assumes full-time enrollment unless otherwise noted.
- Courses/Milestones marked with an "!" are critical and must be completed in the semester listed in the Roadmap to ensure a timely graduation.
- Course availability and sequencing are subject to change.

Course	Title	Credits
Year One		
Fall		
ECE 5001	Practices in ECE	3
ECE 5000	Seminars	0
ECE 5XXX	Foundational or Elective Course	3
	Credits	**6**
Spring		
ECE 5000	Seminars	0
ECE 5XXX	Foundational or Elective Course	3
ECE 5XXX	Electives	6
	Credits	**9**
Year Two		
Fall		
ECE 5000	Seminars	0
ECE 5XXX	Electives	6
ECE 5990	Masters Thesis Research (or Elective)	3
	Credits	**9**
Spring		
ECE 5000	Seminars	0
ECE 5XXX	Elective	3
ECE 5990 or ECE 5960	Masters Thesis Research (or Elective) or Masters Project	3
	Credits	**6**
	Total Credits	**30**

Contact Us

For more information about any School of Science and Engineering graduate program, email ssegrad-admissions@slu.edu.