

ENGINEERING, M.S.

Graduate students pursuing a Master of Science in Engineering at SLU's School of Science and Engineering can choose to pursue a concentration in one of the following areas of emphasis:

- Aerospace and Mechanical Engineering
- Biomedical Engineering
- Civil Engineering
- Electrical and Computer Engineering
- Engineering Physics

Curriculum Overview

Saint Louis University's Master of Science in Engineering is 30 hours in total. The M.S. in Engineering allows students to pursue a personalized curriculum that fits their interests and professional goals. While the majority of the courses will be in the area of emphasis, students have the freedom to take courses in another engineering or secondary discipline to meet individual professional goals and interests. Faculty advisors will work closely with students to ensure that not only are requirements met, but students are prepared for a career in their chosen field.

Fieldwork and Research Opportunities

School of Science and Engineering graduate students 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.

The expert faculty of the School of Science and Engineering collaborate with graduate students in groundbreaking research in the following areas:

- Biomaterials
- Engineering Education
- Fluid Dynamics
- Haptic and Human-Machine Interfaces
- Hydrodynamics and Environmental Fluid Mechanics
- Infrastructure
- Innovation and Entrepreneurship
- Manufacturing and Materials
- Solid and Fluid Biomechanics
- Space Systems
- Tissue Engineering and Regenerative Medicine
- Transportation
- Unmanned Aerial Systems and Flight Control Systems
- Water Quality and Treatment

Careers

Graduates are prepared to enter the 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
- The 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
- ThermoFisher Scientific
- U.S. Air Force, Navy and Army research centers

Graduates are also well positioned to enter a doctoral program in engineering and conduct independent research.

Admission Standards

Begin your application for this program at www.slu.edu/apply (<http://www.slu.edu/apply.php>).

Most admitted students meet the following criteria:

- Undergraduate GPA of at least 3.00
- A four-year undergraduate degree in engineering or related field of the desired graduate program
- GRE optional for fall 2023 admission (quantitative score greater than 150)

Application Requirements

- Application form and fee
- Transcript(s) from all colleges and universities attended
- Three letters of recommendation (preferably from recent instructors)
- Résumé or curriculum vitae
- Professional goal statement

Requirements for International Students

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

- Demonstration of English Language Proficiency.
- Proof of financial support that must include:
 - A letter of financial support from the person(s) or sponsoring agency funding the time at Saint Louis University.
 - A letter from the sponsor's bank verifying that the funds are available and will be so for the duration of study at the University.
- Academic records, in English translation, for postsecondary studies outside the United States. These 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. WES and ECE transcripts are accepted.

Assistantship Application Deadline

Admitted students who want to be considered for an assistantship must submit a separate application for assistantship consideration by March 1.

Review Process

Once all the materials are received and the online application is complete, materials will be reviewed by the School of Science and Engineering's Office of Graduate Education and Research before being sent to the engineering program for a recommendation. The final decision is made by the associate dean of graduate education.

Admissions decisions are made based on the background and educational experience of students. Applications are reviewed when completed, and decisions are generally made within a few weeks.

Apply Now (<http://www.slu.edu/apply.php>)

Scholarships and Financial Aid

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 student financial services office online at www.slu.edu/financial-aid (<https://slu.edu/financial-aid/>).

Learning Outcomes

1. Graduates will be able to apply knowledge of professional and analytical skills that shows an in-depth understanding of theoretical and practical concepts.
2. Graduates will be able to communicate clearly and creatively a mastery of topics required to solve complex engineering problems through written and oral presentations.
3. Graduates will be able to conduct guided research that exhibits independent thought required to pursue advanced work addressing problems in broader contexts. (thesis and project option.)
4. Graduates will be able to exhibit independent thought and ideas required to pursue advanced work addressing problems in broader contexts. (non-thesis option)

Requirements

The Master of Science in Engineering is offered with the following concentrations:

- Aerospace and Mechanical Engineering
- Biomedical Engineering
- Civil Engineering
- Electrical and Computer Engineering
- Engineering Physics

This program is 30 total credit hours. A limited number of hours may be taken at the 4000 level, with program approval; all other courses will be graduate level courses (5000 level and above). Most of the courses students take will be in one of these disciplines—*aerospace engineering (AENG)*, *biomedical engineering (BME)*, *civil engineering*

(*CVNG*), *electrical and computer engineering (ECE)*, *engineering physics (PHYS)* or *mechanical engineering (MENG)*—but students have the freedom to take courses in other engineering disciplines or in other non-engineering disciplines where relevant to the student's program of study.

With the help of their faculty advisor, Master of Science in Engineering students will prepare a program of study, developed within the context of each student's background and career goals. The programs are customizable to suit students' professional goals.

For students who wish to continue on to a Ph.D. program or enter into a research career, we also offer the Project or Thesis option. For the Non-Thesis Project option, 3 of the 30 total credits will be devoted to the Master's Project, and for the Thesis option, 6 of the 30 total credits must be in Thesis Research.

Non-Course Requirements

Students must register in and attend 2 semesters of ESCI 5000 Engineering Graduate Seminar, a 0-credit requirement.

Thesis Option Only

M.S. students will begin taking courses as indicated in the program of study, and when a research area is identified with the faculty advisor, can begin thesis work.

The faculty advisor and student will form a guidance committee of at least three members. The committee members should be persons who will likely provide expertise and guidance that will assist students in research. At least one member, besides the faculty advisor, must be in the student's home department. If the faculty advisor is in another department, one guidance committee member in the home department will be designated as the guidance committee chair.

Thesis Proposal

Students prepare a thesis proposal before the end of the first year. The title and outline for this proposal are approved by the guidance committee and reported on the Master's Thesis Proposal form. After completing the thesis proposal, students meet with the guidance committee at least once every semester.

Thesis Defense

An oral thesis defense must be completed before graduation. A written thesis report should be submitted ~four weeks prior to the oral defense to the guidance committee. The defense typically includes a seminar that is open to the public. Following the open session, the student and guidance committee continue discussion in a closed session. The guidance committee conveys the decision to the department chair and the director of graduate programs.

Continuation Standards

Students must maintain a cumulative grade point average (GPA) of 3.00 in all graduate/professional courses.

Roadmap

Roadmaps are recommended semester-by-semester plans of study for programs and assume full-time enrollment unless otherwise noted.

Courses and milestones designated as critical (marked with !) must be completed in the semester listed to ensure a timely graduation. Transfer credit may change the roadmap.

This roadmap should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor/mentor each semester. Requirements, course availability and sequencing are subject to change.

TBD