

ENGINEERING, M.S.

Graduate students in Engineering at Parks College of Engineering, Aviation and Technology will demonstrate:

1. enhanced professional and analytical skills through the development of an in-depth understanding of theoretical and practical concepts;
2. excellent communications skill through written and oral presentations;
3. creative thinking skills through mastery of topics required to solve complex engineering problems; and
4. depth of knowledge required to pursue advanced work in a modern, ever-changing world through entrepreneurial experiences woven into their program.

These attributes will be assessed during the required examination milestones. For a Master of Science (M.S.) degree, the required milestone is a written research report/thesis and corresponding oral defense presentation. The M.S. course only option can be assessed through a portfolio process by the housing program.

Curriculum Overview

The master's degree in engineering requires a minimum of 30 credits beyond a bachelor's degree. If students pursue an option in research, six of the total credits to the degree must be in thesis research. If students pursue the project option, three of the total credits for the degree must be devoted to carrying out a project, approved by a faculty advisor.

The engineering M.S. also allows students to customize a program of study to meet professional goals. This program, which will also take into account the academic background of students, must be approved by a faculty advisor, the director of the school of engineering and the associate dean for graduate education at Parks College.

The concentrations offered in the engineering master's program are:

- Aerospace engineering
- Mechanical engineering
- Biomedical engineering
- Civil engineering
- Electrical and computer engineering
- Engineering physics

Fieldwork and Research Opportunities

The expert faculty of Parks College collaborate with graduate students in ground-breaking research in the following areas:

- Aircraft engine aerodynamics
- Cardiovascular and assist devices
- Energy, sustainability and environmental
- Engineering education
- Flight control systems
- Haptic and human-machine interfaces
- Human factors/physiology
- Innovation and entrepreneurship
- Medical robotics
- Orthopedic biomechanics
- Regenerative medicine

- Robotics and mechatronics
- Safety
- Sensors and systems
- Signal processing
- Space systems
- Structures and bridges
- Thermal-fluid sciences
- Tissue engineering
- Transportation
- Unmanned aerial systems
- Water resources and hydraulics

Careers

Graduates are prepared to enter the industry as an engineer in their chosen concentration or conduct research for private or government organizations. Graduates are also well positioned to enter a doctoral program in engineering and conduct independent research.

Admission Requirements

Begin your application for this program at www.slu.edu/apply.

Most admitted students meet the following criteria:

- GRE quantitative score greater than 650 (old grading system) or greater than 150 (new grading system)
- Undergraduate GPA of at least 3.00
- A four-year undergraduate degree in engineering related field of desired graduate program.

Application Requirements

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

Requirements for International Students

All admission policies and requirements for domestic students apply to international students along with the following:

- Demonstrate English Language Proficiency (<http://catalog.slu.edu/academic-policies/office-admission/graduate/english-language-proficiency>)
- Proof of financial support 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, of students who have undertaken postsecondary studies outside the United States 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 Parks College's Office of Graduate Education and Research before being sent to the engineering department for a recommendation. The final decision is made by the Parks College Associate Dean of Graduate Education and Research.

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

Parks College 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 <http://finaid.slu.edu>.

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

Students choose one of three options for their Master of Science

- course only
- project option
- thesis option

For students pursuing the research option, 6 of the total credits to the degree must be in Thesis Research. For students pursuing the project option, 3 of the total credits to the degree must be devoted to carrying out a project, approved by students' Faculty Advisor.

Master of Science students prepare a program of study that must be approved by the Faculty Advisor, department chair, and the Parks College Graduate Programs Director. This program of study is developed within the context of background and career goals of students allowing them to customize their program to suit their professional goals.

Non-Course Requirements

Thesis Option

First Semester in the M.S. Program

In the first semester, M.S. students will begin taking courses as indicated in the program of study. In parallel, students may also begin research in an identified research area, under the guidance of a Faculty Advisor.

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 home department of students. If the Faculty Advisor is in another department, then 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 activities. The title and outline for this proposal are approved by the Guidance Committee and reported on the Master's Thesis Proposal/ Prospectus 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. 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. A written Thesis report is submitted ~4 weeks prior to the oral defense.

Based on the Defense, the Guidance Committee may:

- Approve the Thesis,
- Conditionally approve, with specific instructions on revisions to the Thesis document, or
- Not approve the Thesis.

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.