

Mathematics (Pre-Engineering) (BS)

This program is offered by the Walker School of Business & Technology/Math & Computer Science Department, and is only available at the St. Louis home campus.

Program Description

Webster University offers a dual degree program in engineering with Washington University and Missouri University of Science and Technology. This program leads to a BS in mathematics from Webster University and a BS in engineering from Washington University or Missouri University of Science and Technology. Students in the pre-engineering program combine high-quality professional engineering education with a strong background in the humanities, mathematics and the natural and social sciences. The programs at Washington University and Missouri University of Science and Technology include biomedical engineering, computer science, computer engineering, electrical engineering, systems science and engineering, chemical engineering and mechanical engineering. The professional degrees offered in each area are accredited by the Accreditation Board for Engineering and Technology, Inc. (ABET).

Learning Outcomes

- Students will demonstrate critical thinking skills in the area of mathematics.
- Students will demonstrate the ability to solve problems related to the program content.
- Students will demonstrate in depth knowledge of calculus.
- Students will demonstrate comprehension with a variety of mathematics, chosen from applied and/or theoretical topics.
- Students will gain basic computer programming skills.

Degree Requirements

A minimum of 128 credit hours consisting of the following:

- 48 required credit hours (*additional courses may be needed based on chosen engineering field*)
- Applicable University Global Citizenship Program hours, with accommodations for the mathematics BS
- Electives

Global Citizenship Program for Mathematics BS

Requirements are modified to allow one course with the MATH prefix to satisfy both a requirement of the major and also the GCP 'Quantitative Literacy' requirement.

Required Courses

At least 30 of the required 48 mathematics credit hours must be taken at Webster University.

- MATH 1610 Calculus I (5 hours)
- MATH 1620 Calculus II (5 hours)
- MATH 2450 Introduction to Abstract Mathematics (3 hours)
- MATH 3000 Calculus III (5 hours)
- MATH 3010 Discrete Mathematics (3 hours)
- MATH 3040 Differential Equations (3 hours)
- MATH 3160 Linear Algebra (3 hours)
- MATH 3200 Statistics (3 hours)
- MATH 3610 Probability (3 hours)

The following courses are required to complete the pre-engineering transfer requirements:

- CHEM 1100 General Chemistry I (3 hours)
- CHEM 1101 General Chemistry Lab I (1 hour)
- COSC 1550 Computer Programming I (3 hours)
- PHYS 2030 University Physics I (3 hours)
- PHYS 2031 University Physics I: Lab (1 hour)

- PHYS 2040 University Physics II (3 hours)
- PHYS 2041 University Physics II: Lab (1 hour)

Depending on the selected engineering major, the following electives are additionally required to support transfer to the engineering school.

For chemical engineering and biomedical engineering majors only:

- BIOL 1550 Essentials of Biology I (4 hours)
- BIOL 1551 Essentials of Biology I: Lab (1 hour)
- CHEM 1110 General Chemistry II (3 hours)
- CHEM 1111 General Chemistry II: Lab (1 hour)
- CHEM 2100 Organic Chemistry I (3 hours)
- CHEM 2101 Organic Chemistry I: Lab (1 hour)
- CHEM 2110 Organic Chemistry II (3 hours)
- CHEM 2111 Organic Chemistry II: Lab (1 hour)

In addition, there are some department-specific requirements:

Biomedical Engineering

- BIOL 1560 Essentials of Biology II (4 hours)
- BIOL 1561 Essentials of Biology II: Lab (1 hour)

Computer Science & Computer Engineering

- COSC 1560 Computer Programming II (3 hours)