Mechanical Engineering BSME

Admission

Students are admitted to the upper-division program after they have completed an acceptable pre-engineering program. The pre-engineering program can be taken at University of Missouri-St. Louis or at community colleges in the area. Normally, admission is granted to persons who have completed the pre-engineering program with a minimum grade point average of 2.5 over all their mathematics, chemistry, physics, and introductory (statics and dynamics) engineering courses. Students with less than a 2.5 grade point average, but at least a C, in all their science, engineering and mathematics courses may be admitted on a conditional basis.

For more information, please contact the program advisor at (314) 516-7018.

Degree Requirements

A program of 132 semester hours is required for the Bachelor of Science in Mechanical Engineering.

- Majors must complete the University General Education and Graduation requirements, the Pre-Engineering Requirements, the Core Engineering Requirements, and Major Requirements.
- Majors must first complete J E MATH 3170, Engineering Mathematics, with a minimum grade of C-.
- Majors must also complete J E ENGR 2300, Introduction to Electrical Networks, with a minimum grade of C-.
- A minimum grade of C- is necessary to meet the prerequisite requirement for any course.

General Education and Graduation Requirements

The following courses fulfill general education and graduation requirements and are required of Mechanical Engineering majors:

PHIL 2259	Engineering Ethics	3
PHIL 3380	Philosophy of Science	3
HIST 1001	American Civilization to 1865 (MOTR HIST 101)	3
or HIST 1002	American Civilization 1865 to Present (MOTR HIST 102)	
Three additional Social Science courses [1]		9
Total Hours		**18**

[1] One Social Science course must meet the Cultural Diversity requirement. Humanities and social sciences electives must meet both the University of Missouri-St. Louis General Education Requirements and the Humanities and Social Sciences Requirements of the Joint Undergraduate Engineering Program. Check with your advisor for details.

Pre-Engineering Requirements

Students seeking to major in engineering are first designated as 'Undeclared with an interest in Engineering majors' until they have completed Math 1800 Analytical Geometry & Calculus I. Upon successful completion of Math 1800 with a grade of C or better, students will be allowed to declare pre-engineering as their major. Math 1800 must be completed successfully within two attempts.

MATH 1800	Analytic Geometry and Calculus I	5
MATH 1900	Analytic Geometry and Calculus II	5
MATH 2000	Analytic Geometry and Calculus III	5
MATH 2020	Introduction to Differential Equations	3
CHEM 1111	Introductory Chemistry I (MOTR CHEM 150L)	5
PHYSICS 2111	Physics: Mechanics and Heat	4
PHYSICS 2111L	Mechanics and Heat Laboratory	1
PHYSICS 2112	Physics: Electricity, Magnetism, and Optics	4
PHYSICS 2112L	Electricity, Magnetism, and Optics Laboratory	1
ENGR 2310	Statics	3
ENGR 2320	Dynamics	3
ENGL 1100	First-Year Writing (MOTR ENGL 200)	3
Total Hours		**42**

Engineering Core Requirements

CMP SCI 1250	Introduction to Computing	3
J E COMM 2000	Engineering Studio I	1
J E MATH 3170	Engineering Mathematics	4
ENGL 3130	Technical Writing	3
Total Hours		**11**

Mechanical Engineering Major Requirements

MATH 1320	Introduction to Probability and Statistics	3
J C ENGR 4950	Fundamentals of Civil Engineering Review	1
J CMP SC 1002	Introduction to Computing Tools: Matlab Skills	1
J E ENGR 2300	Introduction to Electrical Networks	3
J E ENGR 2340	Electrical Laboratory for Mechanical Engineers	1
J M ENGR 1413	Introduction to Engineering Design: CAD	2
J M ENGR 1414	Introduction to Engineering Design: Project	2
J M ENGR 2110	Machine Shop, Fabrication, and Prototyping	2
J M ENGR 2410	Mechanics of Deformable Bodies	3
J M ENGR 3110	Mechanical Design and Machine Elements	3
J M ENGR 3200	Thermodynamics	3
J M ENGR 3250	Material Science for J M ENGR	4
J M ENGR 3700	Fluid Mechanics	3

J M ENGR 3710	Principles of Heat Transfer	3
J M ENGR 3721	Fluid Mechanics Laboratory	1
J M ENGR 3722	Heat Transfer Laboratory	1
J M ENGR 4120	Design of Thermal Systems	3
J M ENGR 4170	Dynamic Response of Physical Systems	2
J M ENGR 4180	Dynamic Response Laboratory	1
J M ENGR 4110	Mechanical Engineering Design Project	3
J M ENGR 4310/ J E ENGR 4410	Control Systems I	3
J M ENGR 4990	Mechanical Engineering Senior Seminar	1
Mechanical Engineering Electives		12
Total Hours		**61**

Graduation Requirements

In addition to the requirements of the University of Missouri-St. Louis that apply to all candidates for undergraduate degrees, the student must earn a minimum campus grade point average of 2.0 and a minimum grade point average of 2.0 for all engineering courses attempted at the University of Missouri-St. Louis.

Upon completion of the program, graduates will have an ability to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- Communicate effectively with a range of audiences
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- Acquire and apply new knowledge as needed, using appropriate learning strategies

Sample Graduation Plan

First Year

Fall	Hours	Spring	Hours
MATH 1800	5	MATH 1900	5
CHEM 1111	5	HIST 1001 or 1002	3
ENGR 1010[1]	1	EXPLORE – Social Sciences	3
ENGL 1100	3	EXPLORE - Social Sciences[2]	3
	14		**14**

Second Year

Fall	Hours	Spring	Hours	Summer	Hours
MATH 2000	5	MATH 2020	3	ENGR 2320	3
PHYSICS 2111	4	PHYSICS 2112	4		
PHYSICS 2111L	1	PHYSICS 2112L	1		
PHIL 2259	3	ENGR 2310	3		
EXPLORE – Social Sciences	3	PHIL 3380	3		
	16		**14**		**3**

Third Year

Fall	Hours	Spring	Hours	Summer	Hours
J CMP SC 1002	1	J M ENGR 1414	2	J M ENGR 3250	4
J E MATH 3170	4	J M ENGR 2110	2		
J E ENGR 2300	3	J M ENGR 2410	3		
J E COMM 2000	1	ENGL 3130	3		
CMP SCI 1250	3				
	12		**10**		**4**

Fourth Year

Fall	Hours	Spring	Hours	Summer	Hours
J M ENGR 1413	2	J M ENGR 3200	3	J M ENGR 4170	2
J E ENGR 2340	1	J M ENGR 3700	3	J M ENGR 4180	1
MATH 1320	3	J M ENGR 3010[3]	3		
J M ENGR 4730[3]	3	J M ENGR 4900[3]	3		
	9		**12**		**3**

Fifth Year

Fall	Hours	Spring	Hours	Summer	Hours
J M ENGR 3110	3	J M ENGR 3722	1	J M ENGR 4110	3
J M ENGR 3710	3	J M ENGR 4120	3		
J M ENGR 3721	1	J C ENGR 4950	1		
J M ENGR 4310	3	J M ENGR 4700[3]	3		
J M ENGR 4990	1				
	11		**8**		**3**

Total Hours: 133

1 Course does not count toward 132 credit hours for the degree.
2 Course should also satisfy the Cultural Diversity Requirement.
3 Course is an example J M ENGR elective. Four are required for a total of 12 hours.

PLEASE NOTE: This plan is an example of what a four year plan could look like for a typical student. Placement exam scores in math as well as the completion of coursework may change the plan. It should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor each semester. All requirements are subject to change.