BSME in Mechanical Engineering

Degree Program Description

The mechanical engineering curriculum provides students a foundation in mathematics, the basic sciences, and engineering. Students take core courses in the mechanical sciences (dynamics, engineering materials, manufacturing, dynamic systems and control, and machine element design) and the thermal-fluid sciences (thermodynamics, fluid mechanics, and heat transfer). In addition, students obtain laboratory experience through three lab courses focused on instrumentation and measurements, materials and manufacturing, and thermal-fluid systems. The Bachelor of Science in Mechanical Engineering (BSME) prepares students for employment in industry or government or for further study toward other degrees such as the JD, MD, MS, and PhD.

Major Program Requirements

The MAE curriculum allows students to transfer among departments during the first two years. Students concentrate on departmental requirements at the beginning of the junior year. The senior year includes five MAE electives that allow students to develop individual programs of study. This flexibility enables students to complete a traditional program or create their own with special emphasis on areas such as materials, manufacturing, thermal-fluid systems, dynamics and control, or aerospace. Students are also required to complete one 3-hour cultural awareness course which is selected from an approved cultural awareness course list, created and maintained by the College of Engineering or which meets the Arts and Science (A&S) diversity intensive (DI) requirement.

Experience in design is distributed throughout the required courses in the curriculum and culminates in the senior capstone design course. The capstone design experience integrates earlier technical work with economic, safety, ethical, and environmental considerations. The projects are primarily obtained from industrial or private business clients. The presentations of project results are made to a review panel consisting of members of the faculty, the MAE Industrial Advisory Council, and representatives of the client firms.

Major Core Requirements

In addition to the University general education (http://catalog.missouri.edu/academicdegreerequirements/generaleducationrequirements/) and graduation requirements (http://catalog.missouri.edu/academicdegreerequirements/universityrequirements/), the Department of Mechanical and Aerospace Engineering requires the following courses:

CHEM 1400 & CHEM 1401	College Chemistry I and College Chemistry I Laboratory	4
MATH 1500	Analytic Geometry and Calculus I	5
MATH 1700	Calculus II	5
MATH 2300	Calculus III	3
MATH 4100	Differential Equations	3
PHYSCS 2750	University Physics I	5
PHYSCS 2760	University Physics II	5
ENGINR 1000	Introduction to Engineering (*)	1
ENGINR 1050	Foundations of Engineering (*)	2
ENGINR 1200	Statics and Elementary Strength of Materials	3
ENGINR 2100	Circuit Theory for Engineers	3
ENGINR 2200	Intermediate Strength of Materials	3
ISE 2710	Engineering Economic Decision-Making	3
STAT 4710	Introduction to Mathematical Statistics	3
MAE 1100	Introduction to Computer Aided Design	3
MAE 2100	Programming and Software Tools	3
MAE 2200W	Engineering Materials - Writing Intensive	3
MAE 2300	Thermodynamics	3
MAE 2510	Manufacturing Practice	1
MAE 3500	Introduction to Manufacturing Methods	2
MAE 2600	Dynamics	3
MAE 3100	Computational Methods for Engineering Design	3
MAE 3400	Fluid Mechanics	3
MAE 3600	Dynamic Systems and Control	3
MAE 3800	Instrumentation and Measurements Laboratory	3
MAE 3910	Machine Element Design	3
MAE 4300	Heat Transfer	3
MAE 4825	Materials and Manufacturing Laboratory	3
MAE 4834	Thermal Fluids Laboratory	3
MAE 4980W	Senior Capstone Design - Writing Intensive	3
Electives		
Technical elective in approved area of Engineering, Science, or Math, 3000-level or above		3
MAE 4000-level electives		12

* The required First-Year Engineering (FYE) courses, ENGINR 1000 and ENGINR 1050, will be waived for a transfer student pursuing Mechanical Engineering if the student enters MU with transfer credit for an acceptable course in Thermodynamics. The MAE Director of Undergraduate Studies may also waive the FYE courses in cases where the transfer student has demonstrated adequate progress in an engineering program.

Semester Plan

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available.

First Year			
Fall	**CR**	**Spring**	**CR**
CHEM 1400 & CHEM 1401	4	PHYSCS 2750	5
MATH 1500	5	MATH 1700	5
ENGINR 1000	1	ENGINR 1050	2
ENGLSH 1000	3	MAE 1100	3
US Hist./US Govt.	3		
	16		**15**
Second Year			
Fall	**CR**	**Spring**	**CR**
PHYSCS 2760	5	STAT 4710	3
MATH 2300	3	MATH 4100	3
ENGINR 1200	3	ENGINR 2200	3

ENGINR 2100	3	MAE 2100	3
MAE 2300	3	MAE 2600	3
MAE 2510	1	Humanities/Fine Arts Elective	3
	18		**18**

Third Year			
Fall	**CR**	**Spring**	**CR**
MAE 2200	3	MAE 3600	3
MAE 3100	3	MAE 3910	3
MAE 3400	3	MAE 4300	3
MAE 3500	2	MAE 4825	3
MAE 3800	3	Technical Elective	3
	14		**15**

Fourth Year			
Fall	**CR**	**Spring**	**CR**
MAE 4834	3	MAE 4980	3
MAE 4000+ Elective	3	MAE 4000+ Elective	3
MAE 4000+ Elective	3	MAE 4000+ Elective	3
ISE 2710	3	Humanities and Fine Arts	3
Humanities/Fine Arts Elective	3	Behavioral/Social Science	3
	15		**15**

Total Credits: 126