Mechanical Engineering (BSME/MSE)

Integrated Bachelor of Science in Mechanical Engineering/Master of Science in Engineering Program

The integrated degree program results in simultaneously awarding a Bachelor of Science in Mechanical Engineering (BSME) and a Master of Science in Engineering (MSE) degree offered by the J. Mike Walker Department of Mechanical Engineering. The objective of the Integrated BSME/MSE Program is to enable prepared undergraduates in Mechanical Engineering to earn two degrees in a shortened time period. By applying for AP and Credit by Exam courses, having students take recommended summer courses, and allowing seniors to enroll in graduate-level engineering courses reserved for graduate credit, the program enables graduates to complete both degree requirements in five years.

Admissions

Current undergraduate mechanical engineering (ME) students may begin the application process to the Integrated BSME/MSE Program option in the second term of their third year. Admission includes the two steps outlined below. Undergraduate students not in the mechanical engineering major are not eligible to apply. It is expected that all students selected for the program in Step 1 and who have been successful in their first graduate-level coursework will be selected for admission in Step 2. Successful completion will be evaluated and determined by the department's Domestic Graduate Admission Committee and the graduate advisor.

Step 1. Students complete the first step in the application for admission to the Integrated BSME/MSE Program in the second term of the third year. The Step 1 application is internal through the department and includes a resume, statement of purpose, and letter of recommendation. Qualified applicants will be selected based on the applicant's progress to degree completion, grade point average, and other qualifications included in the application materials. Selected students will be notified before the first term of the fourth year of their admission status for the integrated program, allowing them to meet with an academic advisor to plan graduate coursework in the first term of their fourth year.

Step 2. Students complete the second step in the application in the first term of their fourth year. The Step 2 application is formal through the Office of Graduate Admissions (OGA). Admission to the integrated program will be based on a review of the applicant's undergraduate record and GPA, GRE scores, performance in graduate coursework, letters of recommendation, personal statement, TOEFL score (if required), and research experience.

If a student in their fourth year is taking graduate courses and would be on track to complete the integrated program but did not apply in their third year through Step 1, they may apply by completing Step 1 and Step 2 together. These students will be evaluated for admission on the same criteria.

Total Hours Required: 150

Undergraduate: 120

Graduate: 30

Plan of Study

The Plan of Study is a suggested four-year course sequence to support academic planning and serves as a helpful guide. Currently enrolled students should meet with their academic advisor to tailor their course selections and timelines to their individual goals and circumstances.

Course	Title	Hours
Year 1		
Semester 1		
CH 301	Principles of Chemistry I	3
M 408C	Differential and Integral Calculus	4
M E 302	Introduction to Engineering Design and Graphics	3
RHE 306	Rhetoric and Writing	3
First-Year Signature Course (090)		3
	Hours	**16**
Semester 2		
M 408D	Sequences, Series, and Multivariable Calculus	4
PHY X03K & PHY X05M	Engineering Physics I and Laboratory For Physics 302K, 303K, and 317K	4
Social and Behavioral Sciences (080)		3
Visual and Performing Arts (050)		3
U.S. History (060)		3
	Hours	**17**
Year 2		
Semester 1		
E M 306	Statics	3
M 427J	Differential Equations with Linear Algebra	4
M E 316T	Thermodynamics	3
PHY X03L & PHY X05N	Engineering Physics II and Laboratory For Physics 302L, 303L, and 317L	4
American and Texas Government (070)		3
	Hours	**17**
Semester 2		
E M 319	Mechanics of Solids	3
M 427L	Advanced Calculus for Applications II	4
M E 318M	Programming and Engineering Computational Methods	3
M E 314D	Dynamics	3
E S 333T	Engineering Communication	3
	Hours	**16**
Year 3		
Semester 1		
M E 330	Fluid Mechanics	3
M E 130L	Experimental Fluid Mechanics	1
M E 334	Materials Engineering	3
M E 134L	Materials Engineering Laboratory	1
M E 335	Engineering Statistics	3
Career Gateway Elective		3
	Hours	**14**
Semester 2		
M E 338	Machine Elements	3
M E 339	Heat Transfer	3
M E 139L	Experimental Heat Transfer	1
M E 340	Mechatronics	3
M E 140L	Mechatronics Laboratory	1
Career Gateway Elective		3
	Hours	**14**
Year 4		
Semester 1		
M E 344	Dynamic Systems and Controls	3

M E 144L	Dynamic Systems and Controls Laboratory	1
M E 353	Engineering Finance	3
M E 366J	Mechanical Engineering Design Methodology	3
American and Texas Government (070)		3
MSE course		3
	Hours	**16**
Semester 2		
M E 466E	Mechanical Engineering Capstone Design	4
MSE course		3
Hours chosen from: Approved Mathematics/Natural Science Elective		3
Humanities (040)		3
U.S. History (060)		3
	Hours	**16**
Year 5		
Semester 1		
MSE course		3
MSE course		3
MSE course		3
MSE course		3
	Hours	**12**
Semester 2		
MSE course		3
MSE course		3
MSE course		3
MSE course		3
	Hours	**12**
	Total Hours	**150**

Requirements

All requirements are listed below, starting with the most specialized moving to the most general. Additional requirements may follow the table, so be sure to read the entire page. Some required courses listed below may also satisfy General Education requirements, including Core Curriculum.

Degree-Bachelor of Science in Mechanical Engineering (BSME)

Code	Title	Hours
Degree		
M E 130L	Experimental Fluid Mechanics	1
M E 134L	Materials Engineering Laboratory	1
M E 139L	Experimental Heat Transfer	1
M E 140L	Mechatronics Laboratory	1
M E 144L	Dynamic Systems and Controls Laboratory	1
M E 466E	Mechanical Engineering Capstone Design	4
M E 302	Introduction to Engineering Design and Graphics	3
M E 314D	Dynamics	3
M E 316T	Thermodynamics	3
M E 318M	Programming and Engineering Computational Methods	3
M E 330	Fluid Mechanics	3
M E 334	Materials Engineering	3
M E 335	Engineering Statistics	3
M E 338	Machine Elements	3
M E 339	Heat Transfer	3
M E 340	Mechatronics	3
M E 344	Dynamic Systems and Controls	3
M E 353	Engineering Finance	3
M E 366J	Mechanical Engineering Design Methodology	3
CH 301	Principles of Chemistry I	3
E M 306	Statics	3
E M 319	Mechanics of Solids	3
M 408C	Differential and Integral Calculus	4
M 408D	Sequences, Series, and Multivariable Calculus	4
M 427J	Differential Equations with Linear Algebra	4
M 427L	Advanced Calculus for Applications II	4
PHY 303K	Engineering Physics I	3
PHY 303L	Engineering Physics II	3
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	1
PHY 105N	Laboratory For Physics 302L, 303L, and 317L	1
RHE 306	Rhetoric and Writing	3
E S 333T	Engineering Communication	3
Approved career gateway electives		12
Approved natural science/mathematics elective		3
Free electives: Additional coursework to reach total hours required.		0
Subtotal		*102*
General Education		
Remaining Core Curriculum (42 hours total)		24
Foreign Language other than English, Beginning Proficiency		
Subtotal		
College Requirements - Engineering		
General University Requirements		
Total Hours		**126**

Graduate Requirements

Code	Title	Hours
Graduate Engineering Requirements		
Graduate Coursework		**30**
Total Hours		**30**

Additional Requirements and Policies

In order for integrated program students to complete both the BSME and MSE degrees in five years, the department waives six semester credit hours (SCH) of technical area electives and replaces them with six SCH of graduate engineering coursework taken in the fourth year. This reduces the BSME requirement from 126 to 120 SCH.

Students in the integrated program complete 12 SCH of graduate coursework in their fourth year and 18–24 SCH in their fifth year, totaling 30–36 SCH for the MSE degree. Students may choose the coursework, report, or thesis option for the MSE, and course selection is determined with the graduate and academic advisors to ensure degree compliance and alignment with career goals.

Students who do not complete the integrated program, or who choose to discontinue the MSE, may obtain the BSME by applying for a change of major back to the standalone program and fulfilling all standalone degree requirements. Students leaving the integrated program remain on track to graduate with the regular BSME in the same timeframe as originally planned.