

Mechanical Engineering

Program

College of Engineering

Major

Minor

Bachelor of Mechanical Engineering Study Plan

Fall (Year 1)

Item #	Title	Credits
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab	1
CHM 102	Introduction to Chemistry	3
CHM 102 L	Introduction to Chemistry lab	1
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Labs	1
ENG 101	Freshman English 1	3

Spring (Year 1)

Item #	Title	Credits
ME 201	Materials Science and Engineering	3
ME 201 L	Materials Science and Engineering Lab	1
MAT 112	Calculus II	3
PHU 124	Electromagnetism and Waves for Engineers	3
PHU 124 L	Electromagnetism and Waves for Engineers Labs	1
ARB 101	Arabic Language I	2
ENG 112	Freshman English II	3

Year 2 (Fall)

Item #	Title	Credits
ME 203	Applied Mechanics I: Statics	3
ME 205	Introduction to Computer Aided Design	3
ME 305	Manufacturing and Workshop Training	3
ME 305 L	Manufacturing and Workshop Training Lab	1
MAT 211	Calculus III	3
MAT 212	Linear Algebra	3
MAT 213	Differential Equations	3

Spring (Year 2)

Item #	Title	Credits
ME 208	Mechanics of Materials I	3
ME 208 L	Mechanics of Materials I Lab	1
ME 216	Fluid Mechanics	3
ME 216 L	Fluid Mechanics Lab	1
EE 207	Foundation of Electrical Engineering	3
EE 207 L	Foundation of Electrical Engineering Lab	1
MAT 224	Numerical Methods	3
STA 212	Probability and Statistics for Engineers	3

Fall (Year 3)

Item #	Title	Credits
ME 311	Applied Mechanics II: Dynamics	3
ME 312	Mechanics of Materials II	3
ME 312 L	Mechanics of Materials II Lab	1
ME 315	Machine Design	3
ME 316	Engineering Thermodynamics	3
ENG 222	Technical Writing	3

Spring (Year 3)

Item #	Title	Credits
ME 306	Instrumentation and Control Engineering	3
ME 306 L	Instrumentation and Control Engineering Lab	1
ME 308	Advanced Manufacturing Processes	3
ME 308 L	Advanced Manufacturing Processes Lab	1
ME 310	Mechanical Component Design	3
ME 310 L	Mechanical Component Design Lab	1
ME 317	Heat and Mass Transfer	3
ME 317 L	Heat and Mass Transfer Lab	1
ISL 101	Islamic Studies I	2

Summer (Year 3)

Item #	Title	Credits
ME 390	Mechanical Engineering Summer Internship	0

Fall (Year 4)

Item #	Title	Credits
ME 403	Finite Element Modelling for Dynamic and Structural Analysis	3
ME 403 L	Finite Element Modelling for Dynamic and Structural Analysis	1
ME 407	Heating, Ventilation, and Air-Conditioning	3
	ME 4** Technical Elective	3
ME 495	Mechanical Engineering Capstone Project I	3
ISL 112	Islamic Studies II	2

Spring (Year 4)

Item #	Title	Credits
	ME 4** Technical Elective	3
	ME 4** Technical Elective	3
ME 496	Mechanical Engineering Capstone Project II	3
IE 315	Engineering Economy and Cost Analysis	3
ARB 112	Arabic Language II	2

Technical Electives

Item #	Title	Credits
ME 314	Vibration and Damping	3
ME 400	Special Topics in Mechanical Engineering	3
ME 401	Computational Fluid Dynamics and Heat Transfer	3
ME 405	Engineering Safety and Risk Analysis	3
ME 406	Mechatronics	3
ME 410	Energy Conversion and Cogeneration Systems	3
ME 412	Renewable Energy Systems	3
ME 414	Introduction to Compressible Flow Turbomachinery	3
ME 415	Incompressible Flow Machines	3
ME 416	Automotive Engineering	3
ME 418	Water Desalination	3
ME 419	Product Design and Development	3
ME 420	Advanced Visualization and Simulation	3
ME 422	Corrosion Engineering	3
ME 435	Undergraduate Research in Mechanical Engineering	3

Mechanical Engineering Track: Digital Design and Manufacturing

ME students have the option to select electives in the fourth year according to their desired academic objective in consultation with their academic advisor. Regular, non-track students select any three of the offered ME electives in the fourth year. ME students also have the option to follow the Digital Design and Manufacturing track in the program. Irrespective of whether a student opts for the Digital Design and Manufacturing track or not, the total credits for electives must be 9 CRHs. All offered technical electives are available for regular non-track students, whether they opt for the track or not.

In summary, all ME students follow the same curriculum and take the same required courses, with the difference being the designation of the electives in the fourth year.

Per standing policy, and with the approval of the department chair, a student may opt to take one of the 3 CRH technical electives from another engineering program.

Digital Design and Manufacturing Track (for IE students only)

The industrial and information revolutions made tremendous impact on manufacturing and communication systems of today. Technologies developed in those revolutions are fusing into a new industrial revolution now known as Industry 4.0 where digital information is inherent in manufacturing activities. Industry 4.0 changes the way products are designed and manufactured today and will revolutionize product development in future.

ME department, in conjunction with the Industrial Engineering (IE) department, offers the Digital Design and Manufacturing track to prepare students for Industry 4.0. Students opting for this track will gain focused knowledge by taking electives offered by ME and IE departments in this interdisciplinary area.

Track Course Requirements

Students must complete the following (6 CRHs) core courses:

Item #	Title	Credits
ME 308	Advanced Manufacturing Processes	3
IE 315	Engineering Economy and Cost Analysis	3
Students will need to complete three courses (9 CRHs) from this list		

A student opting for the Digital Design and Manufacturing track can take two and one electives in the Fall and Spring semesters, respectively or vice versa.

Minor in Mechanical Engineering (for IE students)

ME department offers a minor in Mechanical Engineering which is open to IE students only. Students opting for this minor will gain concentrated knowledge by taking advanced ME courses.

Minor Course Requirements

IE students taking the minor are expected to take additional 15 CRHs on top of their existing IE study plan courses from the following list of existing ME courses:

Item #	Title	Credits
ME 307	Thermal Fluids Engineering II	3
ME 307 L	Thermal Fluids Engineering II Lab	1
ME 310	Mechanical Component Design	3
ME 310 L	Mechanical Component Design Lab	1
ME 311	Applied Mechanics II: Dynamics	3
ME 312	Mechanics of Materials II	3
ME 312 L	Mechanics of Materials II Lab	1
ME 315	Machine Design	3
ME 407	Heating, Ventilation, and Air-Conditioning	3

General Guidelines

1. The student must complete a total of additional 15 CRHs from IE department
2. Entry Point: Nominally before or at end of Year 2 (sophomore-level) to allow for sufficient time to complete all the courses.
3. The student must have a minimum GPA of 3.25. Admission to the minor is subject to the approval of the ME and IE departments.
4. The student should complete the main degree requirements before starting the minor.
5. Any of the pre-approved courses can be taken whenever the course is offered by IE department and subject to prevailing academic regulations.
6. Lab courses cannot be taken on their own. A Lab course has to be taken with or after the corresponding course has been taken.
7. Completion of a minor program is posted on the transcript alongside the main major. Minor programs are not noted on diplomas.