

Mechanical Engineering

Accredited by the Engineering Accreditation Commission of ABET,
 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone (410) 347-7700.

University Requirements (23-24)

Writing, Rhetoric and American Cultures (WRA)	4
Integrative Studies in Humanities (IAH)	8
Integrative Studies in Social Sciences (ISS)	8
Bioscience (one of the following):	
BS 110, BS 111, ENT 205, MMG 201	
MMG 301, PLB 105, PSL 250, ZOL 141	3-4

College Requirements (29)

CEM 141 General Chemistry I	4
CSE 131 Technical Computing and Problem Solving	3
MTH 132 Calculus I	3
MTH 133 Calculus II	4
MTH 234 Multivariable Calculus	4
MTH 235 Differential Equations	3
¹ PHY 183 Physics for Scientists and Engineers I	4
¹ PHY 184 Physics for Scientists and Engineers II	4

Bachelor of Science Major Requirements (55)

CE 221 Statics	3
CEM 161 Chemistry Laboratory I	1
ECE 345 Electronic Instrumentation and Systems	3
ME 180 Engineering Graphics Communications	3
ME 201 Thermodynamics	3
ME 222 Mechanics of Deformable Solids	4
ME 332 Fluid Mechanics	4
ME 361 Dynamics	3
ME 371 Mechanical Design I	3
ME 391 Mechanical Engineering Analysis	3
ME 410 Heat Transfer	3
ME 412 Heat Transfer Laboratory	2
ME 451 Control Systems	4
ME 461 Mechanical Vibrations	4
ME 471 Mechanical Design II	3
ME 481 Mechanical Engineering Design Projects	3
MSE 250 Materials Science and Engineering	3
STT 351 Probability and Statistics for Engineering	3

A. Senior Electives (12)

A minimum of 12 credits must be taken from the list below, including at least one Design-Intensive Course:

ME 422 Introduction to Combustion	3
ME 423 Intermediate Mechanics of Deformable Solids	3
ME 425 Experimental Mechanics	3
ME 426 Introduction to Composite Materials	3
ME 432 Intermediate Fluid Mechanics	3
ME 440 Aerospace Engineering Fundamentals	3
ME 444 Automotive Engines	3
ME 457 Mechatronic System Modeling and Simulation	3
ME 464 Intermediate Dynamics	3
ME 465 Computer Aided Optimal Design	3
ME 477 Manufacturing Processes	3
ME 478 Product Development	3
ME 486 International Networked Teams/ Engineering Design	3
ME 490 Independent Study in Mechanical Engineering	1-3
ME 491 Selected Topics in Mechanical Engineering	1-4
ME 494 Biofluid Mechanics and Heat Transfer	3
ME 495 Tissue Mechanics	3
ME 497 Biomechanical Design	3

¹If PHY 231 is taken in place of PHY 183, PHY 233B must also be completed. If PHY 232 is taken in place of PHY 184, PHY 234B must also be completed.

B. Design-Intensive courses (a minimum of 3 credits):

ME 416 Computer Assisted Design of Thermal Systems	3
ME 417 Design of Alternative Energy Systems	3
ME 442 Turbomachinery	3
ME 445 Automotive Powertrain Design	3
ME 456 Mechatronic System Design	3
ME 465 Computer Aided Optimal Design	3
ME 475 Computer Aided Design of Structures	3

Options:

The Department offers options in engineering mechanics, and manufacturing engineering to students wishing an area of specialization in their degree. The options are available to, but not required of, any student enrolled in the Bachelor of Science degree program in mechanical engineering. NOTE: Completing the Bachelor of Science degree in mechanical engineering with an option may require more than 128 credits. Upon completion of the required courses for one of these options, certification will appear on the student's official transcript.

Manufacturing Engineering Option (13)

EC 210 Economics Principles Using Calculus	3
ME 372 Machine Tool Laboratory	1
ME 477 Manufacturing Processes	3
ME 478 Product Development	3

Select one of the following courses (3 credits):

CHE 472 Composite Materials Processing	3
ECE 415 Computer Aided Manufacturing	3
MSE 426 Introduction to Composite Materials	3

Engineering Mechanics Option (12)

ME 423 Intermediate Mechanics of Deformable Solids	3
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Select three of the following courses (9 credits):

ME 425 Experimental Mechanics	3
ME 432 Intermediate Fluid Mechanics	3
ME 464 Intermediate Dynamics	3
ME 475 Computer Aided Design of Structures	3

Additional Senior Elective choices can be found in the [ME Bulletin](#) which is the undergraduate newsletter for Mechanical Engineering Majors.

Other Electives (Variable)

Total Credits Required for Degree 128

The requirements listed above apply to students admitted to the major of Mechanical Engineering in the Department of Mechanical Engineering beginning Fall 2007. The Department of Mechanical Engineering (ME) constantly reviews program requirements and reserves the right to make changes as necessary. Consequently, each student is strongly encouraged to consult with his/her advisor to obtain assistance in planning an appropriate schedule of courses. Students who have questions about Mechanical Engineering should contact the Mechanical Engineering Department Advising Office, 2560 Engineering Building, phone (517) 355-3338.

Some courses may have prerequisites, which are not otherwise required in the program. Students should check course descriptions to ensure they are aware of prerequisites.

Mechanical Engineering Sample Program

Freshman Year				Sophomore Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
Bioscience	3/4	ME 180	3	CE 221	3	IAH 20X	4
CEM 141	4	MTH 133	4	CSE 131	3	ME 201	3
CEM 161	1	PHY 183	4	Elective	3	ME 222	4
ISS 2XX	4	WRA 1XX	4	MTH 234	4	MSE 250	3
MTH 132	3			PHY 184	4	MTH 235	3
Total	15/16	Total	15	Total	17	Total	17
Junior Year				Senior Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
Elective	3	ECE 345	3	ME 410	3	ME 412	2
ISS 3XX	4	Elective	2	ME 451	4	ME 461	4
ME 361	3	IAH 2XX	4	ME 471	3	ME 481	3
ME 391	3	ME 332	4	Senior Elective	3	Senior Elective	3
STT 351	3	ME 371	3	Senior Elective	3	Senior Elective	3
Total	16	Total	16	Total	16	Total	15

**Program Educational Objectives for the Undergraduate Program
 in Mechanical Engineering
 Department of Mechanical Engineering
 Michigan State University
 (Approved by the Department Faculty February 17, 2005)**

- Objective 1:** *Our graduates will be competent engineers practicing in a diverse range of activities.*
- Objective 2:** *Our graduates will use their mechanical engineering education as an impetus for personal & professional growth.*
- Objective 3:** *Our graduates will have achieved a noteworthy level of workplace responsibility through understanding their environment and capabilities, including the importance of knowledge management.*
- Objective 4:** *Our graduates will be independent thinkers who take ownership in identifying problems and determining effective solution strategies in a timely manner.*