BS in Mechanical Engineering

Educational Objectives

Graduates of the Bachelor of Science degree in mechanical engineering are expected to meet the following objectives within a few years of graduation:

- Satisfy constituency needs for graduates to be successful mechanical engineers with emphasis on sustainability and globalization.
- Develop skills to pursue life-long learning.
- Achieve competence in solving real-world problems in a multi-disciplinary work environment.

Program Requirements

The program requires the completion of 128 credit hours for graduation, minus hours commensurate with advanced placement credit. Specific degree requirements are given below. All the prerequisite courses must have a grade that generates 2.000 or more credit points per credit hour. A minimum total of 128 credit hours is required for the BS in mechanical engineering program and includes the 71 credit hours of major courses that must be completed with a minimum grade point average of 2.000. In addition to meeting the requirements of the WSU General Education Program (http://catalog.wichita.edu/undergraduate/academic-information/general-education-program/) and the requirements of the College of Engineering, students pursuing a BS in mechanical engineering must take specific mathematics/basic sciences as well as engineering/technical courses as listed below:

Course	Title	Hours
General Education (34-35 credit hours)		
Select courses to meet General Education requirements [1, 2]		24
General Education courses that will also meet Program Requirements		
PHIL 385	Engineering Ethics	3
CHEM 211	General Chemistry I [3]	5
MATH 242	Calculus I [3]	5
Mathematics and Basic Sciences for Engineers [3]		
MATH 243	Calculus II	5
MATH 344	Calculus III	3
MATH 555	Differential Equations I	3
PHYS 313	Physics for Scientists I	4
PHYS 314	Physics for Scientists II	4
PHYS 315	University Physics Lab I	1
Engineering/Technical Content		
AE 223	Statics	3
AE 333	Mechanics of Materials	3
ECE 282	Circuits I	4
IME 222	Engineering Graphics	2
IME 222L	Graphics Lab	1
ME 250	Materials Engineering	3
ME 251	Materials Engineering Laboratory	1
ME 325	Numerical Methods for Engineers	3
ME 335	Dynamics for Mechanical Engineers	3
ME 339	Design of Machinery	3
ME 398	Thermodynamics I	3
ME 439	Mechanical Engineering Design I	3
ME 475	Integrated Design and Manufacturing	3
ME 521	Fluid Mechanics	3
ME 522	Heat Transfer	3
ME 533	Mechanical Engineering Laboratory	3
ME 633	Mechanical Engineering Systems Laboratory	3
ME 659	Mechanical Control Systems	3
Select one mechanical design course with the approval of the advisor		3
ME 541	Mechanical Engineering Design II	
ME 637	Computer-Aided Engineering	
ME 729	Computer-Aided Analysis of Mechanical Systems	
ME 749	Applications of Finite Element Methods in Mechanical Engineering	
Select one mechanical design and manufacturing course with the approval of the advisor		3
ME 672	Manufacturing of Composites	
ME 680	Laser Materials Processing and Design	
ME 737	Robotics and Control	
ME 761	Autonomous Vehicles	
ME 762	Polymeric Composite Materials	
Select two thermal systems elective courses with the approval of the advisor		6
ME 502	Thermodynamics II	
ME 602	Engineering for the Environment	
ME 625	Applications in Thermal Engineering	
ME 690	Fundamental Electrochemistry	
ME 702	Energy and Sustainability	
ME 740	Indoor Air Pollution and Simulation	
ME 770	Transport in Porous Media	
ME 782	Engineering Applications of Computational Fluid Dynamics and Heat Transfer	
Select one energy systems design elective course with the approval of the advisor		3
ME 644	Design of HVAC Systems	
ME 671	Fluid Machinery	
ME 731	Advanced Heat Exchanger Design	
ME 745	Design of Thermal Systems	
Open Technical Elective (advisor consent required) [4]		3
ME 662	Senior Capstone Design	3
Total Credit Hours		**128**

1. Required major courses may also count towards General Education requirements. Students will need to select additional electives to reach 128 credit hours required for graduation with assistance from an advisor.
2. See the requirements of the WSU General Education program (http://catalog.wichita.edu/undergraduate/academic-information/general-education-program/). First-year college students planning to major in mechanical engineering must take a First-Year Seminar (FYS) within their first two semesters at WSU. The FYS course should be completed in either fine arts or humanities or social/behavioral sciences.

[3] These satisfy ABET's 30 credit hour requirement in mathematics and basic sciences. These also serve as prerequisites for many of the major/discipline courses listed.

[4] Must be chosen from a list of approved courses with the consent of the advisor.

Mechanical Engineering Honors Track Admission

1. Students must be admitted to the Honors College;
2. Students must be within 60 credit hours of degree completion;
3. Students must have an overall GPA of at least 3.500 and a GPA of 3.500 in all engineering courses; and
4. Students must complete a letter of application to the mechanical engineering chairperson including the following:
   a. Transcript;
   b. Resume; and
   c. One-page essay on academic and career plans including an undergraduate research idea.

Mechanical Engineering Honors Track Completion Requirements

1. Formal admission into the mechanical engineering departmental honors track;
2. Maintain a minimum overall GPA of 3.500 and a minimum GPA of 3.500 in engineering courses; and
3. Complete ME 749 or ME 782 with a grade of *B* or better (GPA of 3.000/4.000 or better).

Applied Learning

Students in the Bachelor of Science in mechanical engineering program are required to complete an applied learning or research experience to graduate from the program. The requirement can be met by completing ME 662 Senior Capstone Design.