

MECHANICAL ENGINEERING, BACHELOR OF SCIENCE (543P, 543)

Program Coordinator

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Mechanical engineers are involved in designing and building almost everything that is needed in our modern world, from nearly invisible electro-mechanical devices to enormous power generating and distribution systems producing millions of horsepower. Mechanical engineers use scientific principles from the physical world to create a tremendous variety of mechanical and thermal systems. Practicing mechanical engineers use these principles to design, analyze, manufacture, and maintain systems that include:

- automobiles and aircraft
- heating and cooling systems
- electric power plants
- specialized materials
- manufacturing plants
- industrial equipment and machinery

Mechanical engineers need a solid understanding of engineering science, which includes mechanics, engineering materials, thermodynamics and fluid mechanics. The program at WKU focuses on these sciences as well as design and professional skills necessary for a successful career in mechanical engineering. Our graduates have a strong competitive advantage with their unique background of engineering fundamentals combined with practical knowledge and experience. The mechanical engineering program provides a project-based, learner-driven environment relevant to the needs of modern society. In support of this learning environment, the professional engineering activities of the faculty create opportunities for the students to practice the art and science of contemporary Mechanical Engineering.

The curriculum requires a minimum of 58.5 technical specialty hours, completion of required Colonnade coursework, and 32-33 semester hours of required mathematics and science.

The WKU Mechanical Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Mechanical Engineering Program Educational Objectives

The mission is achieved by focusing on specific program educational objectives. Within a few years of completing the Mechanical Engineering Program, a graduate will:

- Objective 1:** Either be contributing to their regions' economic development through employment in mechanical engineering or related professions, or pursuing advanced credentials.
- Objective 2:** Occupy leadership roles in their profession, or in their communities, as their career develops
- Objective 3:** Demonstrate professionalism on diverse teams across a range of varied responsibilities
- Objective 4:** Be proactive in their professional development and engage in the continuing education needed to maintain and enhance their career.

For detailed information on the mechanical engineering program, please see the "Mechanical Engineering Program Guide" (available at <http://wku.edu/seas> (<http://wku.edu/seas/>)) and/or contact your advisor.

Program Requirements (61.5 hours)

A baccalaureate degree requires a minimum of 120 unduplicated semester hours. More information can be found at www.wku.edu/registrar/degree_certification.php. (https://www.wku.edu/registrar/degree_certification.php)

Students who began WKU in the Fall 2014 and thereafter should review the Colonnade requirements located at: <https://www.wku.edu/colonnade/colonnaderequirements.php>. (<https://www.wku.edu/colonnade/colonnaderequirements.php>)

Academic Standards for the Mechanical Engineering Program

Students are admitted as a Pre-Major in Mechanical Engineering. In order to transition from Pre-Major to Major and to graduate with a degree in Mechanical Engineering, student must satisfy the requirements below. All courses below must have a grade of "C" or better.

Code	Title	Hours
College Composition (F-W1)		3
Human Communications (F-OC)		3
MATH 136	Calculus I (or equivalent credit)	4
MATH 137	Calculus II (or equivalent credit)	4
PHYS 255 & PHYS 256	University Physics I and University Physics I Lab	5
Select one of the following:		4-5
CHEM 116 & CHEM 106	Introduction to College Chemistry and Fundamentals of General Chemistry Laboratory	
CHEM 120 & CHEM 121	College Chemistry I and College Chemistry I Laboratory	
EM 222	Statics	3
Total Hours		26-27

These pre-major eligibility requirements MUST be completed before enrolling in ME 200: Sophomore Design. Check degree audit for progress towards meeting these requirements.

Program Requirements

Code	Title	Hours
ME 176	Mechanical Engineering Freshman Design	1
ME 180	Freshman Design II	3
ME 200	Sophomore Design	3
ME 220	Engineering Thermodynamics I	3
ME 240	Materials and Methods of Manufacturing	3
ME 241	Materials and Methods of Manufacturing Lab	1
ME 310	Engineering Instrumentation and Experimentation	3
ME 325	Elements of Heat Transfer	4
ME 330	Fluid Mechanics	3
ME 332	Fluid Mechanics Laboratory	1

ME 344	Mechanical Design	3
ME 347	Mechanical Systems Laboratory	1
ENGR 490	Senior Project I	2
ENGR 491	Senior Project II	3
EE 210	Circuits & Networks I	3.5
EM 222	Statics	3
EM 303	Mechanics of Deformable Solids	3
EM 313	Dynamics	3
Mechanical Engineering Technical Electives		15
Choose from the following list:		
ME 321	Engineering Thermodynamics II	
ME 494	WKU ME Selected Topics	
ME 495	WKU ME Selected Projects	
ME 496	WKU – ME Selected Topics (Fall)	
ME 497	WKU – ME Selected Topics (Spring)	
CE 305	Risk Analysis	
CE 382	Structural Analysis	
EE 460	Continuous Control Systems	
ENGR 360	System Dynamics and Modeling	
ENGR 400	Principles of Systems Engineering	
PHYS 318	Data Acquisition Using Labview	
Total Hours		61.5

Code	Title	Hours
Additional Required Courses		
MATH 136	Calculus I	4
MATH 137	Calculus II	4
MATH 237	Multivariable Calculus	4
MATH 331	Differential Equations	3
PHYS 255 & PHYS 256	University Physics I and University Physics I Lab	5
PHYS 265 & PHYS 266	University Physics II and University Physics II Laboratory	5
Pick one Chemistry option		4-5
CHEM 120 & CHEM 121	College Chemistry I and College Chemistry I Laboratory	
CHEM 116 & CHEM 106	Introduction to College Chemistry and Fundamentals of General Chemistry Laboratory	
Math and Science Elective		3

Each mechanical engineering student must also take at least one mathematics / science elective, for a total of a minimum of 32 hours of mathematics and science courses beginning with MATH 136. This elective must be chosen from the following list:

ASTR 214	General Astronomy	
BIOL 120 & BIOL 121	Biological Concepts: Cells Metabolism and Genetics and Biological Concepts: Cells, Metabolism, and Genetics Lab	
BIOL 122 & BIOL 123	Biological Concepts: Evolution, Diversity, and Ecology and Biological Concepts: Evolution, Diversity, and Ecology Lab	

BIOL 207	General Microbiology	
CHEM 222 & CHEM 223	College Chemistry II and College Chemistry II Laboratory	
PHYS 316	Computational Physics	
PHYS 318	Data Acquisition Using Labview	
MATH 305	Introduction to Mathematical Modeling	
MATH 307	Introduction to Linear Algebra	
MATH 310	Introduction to Discrete Mathematics	
MATH 370	Applied Techniques in Mathematics	
STAT 301	Introductory Probability and Applied Statistics	

Total Hours 32-33

Students must complete a minimum of 32 hours of mathematics and science courses beginning with MATH 136. Student must also satisfy the WKU Colonnade requirements.

Finish in Four Plan

First Year			
Fall	Hours	Spring	Hours
ME 176		1 ME 180	3
MATH 136		4 MATH 137	4
CHEM 116 & CHEM 106 (or CHEM 120/121)		4 PHYS 255	4
ENG 100		3 PHYS 256	1
COMM 145		3 EM 222	3
		15	15

Second Year			
Fall	Hours	Spring	Hours
ME 240		3 ME 200	3
ME 241		1 MATH 331	3
MATH 237		4 EM 303	3
PHYS 265		4 EE 210	3.5
PHYS 266		1 ENG 200	3
HIST 101 or HIST 102		3	
		16	15.5

Third Year			
Fall	Hours	Spring	Hours
ME 220		3 EM 313	3
ME 344		3 ME 330	3
ME 310		3 ME 332	1
ME 347		1 ME Technical Elective	3
Math/Science Elective		3 ME Technical Elective	3
Colonnade - Arts & Humanities		3 Colonnade - Social & Behavioral	3
		16	16

Fourth Year			
Fall	Hours	Spring	Hours
ME 325		4 ENGR 491	3
ENGR 490		2 ME Technical Elective	3
ME Technical Elective		3 ME Technical Elective	3
Colonnade - Social & Cultural		3 Colonnade - Local to Global	3
ENG 300		3 Colonnade - Systems	3
		15	15

Total Hours 123.5