

MECHANICAL ENGINEERING, B.S.M.E.

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The Marshall University Bachelor of Science in Mechanical Engineering (B.S.M.E.) program goals are as follows:

1. Practice the mechanical engineering discipline successfully within community accepted standards.
2. Achieve personal and professional success with awareness and commitment to ethical and social responsibilities, both as individuals and in team environments.
3. Engage in professional service, such as participation in professional society and community service.
4. Engage in lifelong learning activities, such as graduate studies or professional workshops.
5. Develop a professional career in the prevailing market that meets personal goals, objectives and desires.

The student outcomes of the B.S.M.E. are:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Admission Requirements

- Meet Marshall University admission requirements.
- Admission to the B.S.M.E. program requires a minimum composite ACT score of 21 with a math score of 24, or a minimum SAT composite of 980 with a math SAT of 560.
- Transfer students must have completed MTH 127 College Algebra-Expanded/MTH 130 College Algebra and MTH 132 Precalculus with Sci Applica.

Students not meeting the ACT/SAT score requirements above may enroll in Pre-Engineering. Requirements for Pre-Engineering are a minimum composite ACT score of 19 with a math score of 19-23,

or a minimum SAT composite of 900 with a math SAT of 460-550. Students who are admitted to the Pre-Engineering program generally will require an additional calendar year to complete the requirements for the B.S.M.E. degree. Transfer students must be eligible to take MTH 127 College Algebra-Expanded/MTH 130 College Algebra and MTH 132 Precalculus with Sci Applica.


Graduation Requirements

The B.S.M.E. degree program requires a minimum of 125 credit hours of coursework. In addition to fulfilling the university's requirements for graduation, B.S.M.E. students must maintain a minimum GPA of 2.0 in all professional courses. These professional courses include mathematics (MTH 229 Calculus/Analytic Geom I (CT) or above), required science courses, core engineering (ENGR) courses, mechanical engineering courses (ME), and courses used as technical electives. Entering students with a Math ACT of 24-26 are required to take MTH 132 Precalculus with Sci Applica. Such students will likely need an extra semester or summer term to satisfy B.S.M.E. requirements.

Co-operative Education








Students may elect to participate in the co-operative education program. Students in the program will have periodic full-time work experiences in their area of interest with participating companies. Information on the program can be obtained from the department chair or academic advisor.


















 - General Education Course

 - Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

Major

The Core Curriculum is designed to foster critical thinking skills and introduce students to basic domains of thinking that transcend disciplines. The Core applies to all majors. Information on specific classes in the Core can be found at <https://www.marshall.edu/gened/>.

Code	Title	Credit Hours
Core Curriculum		
<i>Core 1: Critical Thinking</i>		
FYS 100	First Yr Sem Critical Thinking	3
or FYS 100H	First Year Seminar-Honors	
MTH 229 	Calculus/Analytic Geom I (CT)	5
	Critical Thinking Course	3
<i>Core 2</i>		
ENG 101 	Beginning Composition	3
ENG 201 	Advanced Composition	3
CMM 103 	Fund Speech-Communication	3
MTH 229 	Calculus/Analytic Geom I (CT)	5
PHY 211 	University Physics I	5
& PHY 202 	and General Physics I Laboratory	
	Core II Humanities	3
	Core II Social Science	3
	Core II Fine Arts	3
<i>Additional University Requirements</i>		
	Writing Intensive	3


Writing Intensive		3
Multicultural or International		3
ME 452	Capstone Design I	1
ME 453 	Capstone Design II	3
Major-Specific		
MTH 229  	Calculus/Analytic Geom I (CT)	5
MTH 230  	Calculus/Analytic Geom II	4
MTH 231 	Calculus/Analytic Geom III	4
MTH 335 	Ordinary Diff Equations	3
CHM 211  	Principles of Chemistry I	3
PHY 211 	University Physics I	4
PHY 202  	General Physics I Laboratory	1
PHY 213 	University Physics II	4
ENGR 102	Introduction to CAD	2
ENGR 103	Freshman Engineering Seminar	1
ENGR 104	The Engineering Profession	1
ENGR 213 	Statics	3
ENGR 214 	Dynamics	3
ENGR 215	Engineering Materials	3
ENGR 216	Mech of Deformable Bodies	3
ENGR 217	Engineering Co-Op Preparation	1
ENGR 219	Engineering Thermodynamics	3
ENGR 222	Engr Cost Analysis & Economy	3
ENGR 335 	Adv Engineering Analysis	3
ME 111	Mech Engineering Computations	3
ME 240	Manufacturing Processes	3
ME 245	Circuits and Instrumentation	3
ME 310	Thermodynamics II	3
ME 325	Experimental Design and Thermo	2
ME 340	Machine Element Design	3
ME 350	Heat Transfer	3
ME 360	Fluid Dynamics	4
ME 410	Kinematics & Design of Machine	3
ME 420	Control Systems	3
ME 425	Mechanical Engineering Lab-II	1
ME 455	Metallurgy	3
ME 452	Capstone Design I	1
ME 453 	Capstone Design II	3
Design Elective		3
At least one design elective must be taken from the following courses:		
ME 430	Design of Thermal Systems	
ME 435	Design of Mechanical System	
<i>Technical Electives</i>		9
At least three technical electives must be taken from the following approved list of courses:		
Any 300-level or higher ME course not taken to satisfy other B.S.M.E. degree requirements		
Any 300-level or higher CE, EE, or BME course not taken to satisfy other B.S.M.E. requirements		
Any 300-level or higher ENGR course not taken to satisfy other B.S.M.E. degree requirements		


Other courses with the approval of the student's advisor and the department chair

- To be eligible to take ME 452 Capstone Design I, students must have senior standing in mechanical engineering. Senior standing is defined for the B.S.M.E. as having completed or concurrently taking these three courses: ME 325 Experimental Design and Thermo, ME 350 Heat Transfer, and ME 410 Kinematics & Design of Machine.
- To be eligible to take ME 453 Capstone Design II, students must have completed ME 452 Capstone Design I and at least one of the design electives (ME 430 Design of Thermal Systems or ME 435 Design of Mechanical System).

Major Information












- Course offerings and course attributes are subject to change each semester. Please consult each semester's schedule of courses for availability and attributes.
- Students are required to know and track their degree requirements for graduation or for entrance to a professional school.

 - General Education Course




 - Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

Four Year Plan



Mechanical Engineers apply fundamental math and physics laws to design, fabricate and innovate mechanical devices. They are multi-skilled and have working knowledge of computers, electricity, structures and mechanisms, materials, and manufacturing processes. The Bachelor of Science in Mechanical Engineering (B.M.S.E.) at Marshall University is designed to emphasize service, systems-based knowledge, and sustainability combining a traditional engineering approach with new and emerging fields.

Course	Title	Credit Hours
First Year		
First Semester		
CHM 211  	Principles of Chemistry I	3
MTH 229  	Calculus/Analytic Geom I (CT)	5
ENGR 103	Freshman Engineering Seminar	1
ENGR 104	The Engineering Profession	1
CMM 103 	Fund Speech-Communication	3
FYS 100 or FYS 100H	First Yr Sem Critical Thinking or First Year Seminar-Honors	3
Credit Hours		16
Second Semester		
MTH 230  	Calculus/Analytic Geom II	4
ENG 101 	Beginning Composition	3
ENGR 102	Introduction to CAD	2
PHY 211 	University Physics I	4
PHY 202  	General Physics I Laboratory	1
ME 111	Mech Engineering Computations	3
Credit Hours		17


Second Year**First Semester**

ENGR 213 	Statics	3
ENGR 215	Engineering Materials	3
ME 245	Circuits and Instrumentation	3
MTH 231 	Calculus/Analytic Geom III	4
PHY 213 	University Physics II	4
Credit Hours		17




Second Semester

ENGR 214 	Dynamics	3
ENGR 216	Mech of Deformable Bodies	3
ENGR 217	Engineering Co-Op Preparation	1
ENGR 219	Engineering Thermodynamics	3
ME 240	Manufacturing Processes	3
MTH 335 	Ordinary Diff Equations	3
Credit Hours		16

Third Year**First Semester**

ME 360	Fluid Dynamics	4
ME 310	Thermodynamics II	3
ENGR 335 	Adv Engineering Analysis	3
ME 340	Machine Element Design	3
ENGR 222	Engr Cost Analysis & Economy	3
Credit Hours		16


Second Semester

Core II Social Science (MC/I, WI)		3
ME 420	Control Systems	3
ME 325	Experimental Design and Thermo	2
ME 350 	Heat Transfer	3
ME 410	Kinematics & Design of Machine	3
ENG 201  	Advanced Composition	3
Credit Hours		17

Fourth Year**First Semester**

ME 425	Mechanical Engineering Lab-II	1
ME 452	Capstone Design I	1
ME Technical Elective		3
ME Technical Elective II		3
Core II Fine Art		3
ME Design Elective		3
Credit Hours		14

Second Semester

ME 453 	Capstone Design II	3
ME 455	Metallurgy	3
ME Technical Elective III		3
Core II Humanities (WI, CT)		3
Credit Hours		12
Total Credit Hours		125