

MECHANICAL ENGINEERING

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

Mechanical engineering is the profession which designs, develops, and manufactures machines that produce, transmit, or use power. Mechanical engineers are involved in the design, development, and production of virtually every product one can imagine. The range of job possibilities for mechanical engineers, both in location and function, is limitless.

The mechanical engineering program at Arkansas Tech is designed to give its students a solid grounding in the machine design and thermal systems areas and to satisfy the engineering manpower needs of industry in Arkansas and the mid-south region. The required courses provide a basic foundation in mechanical engineering with a strong cross-disciplinary component and an emphasis on engineering design. The Bachelor of Science in Mechanical Engineering program is accredited by the Engineering Accreditation Committee of ABET, <http://www.abet.org>.

Most graduates of the engineering program go directly into the work force as practicing engineers. Many are employed by manufacturing companies in the Arkansas River Valley area, while others have obtained positions with large national and multinational corporations. A number of graduates have elected to attend one of many different graduate schools specializing in disciplines such as engineering (electrical, mechanical, industrial, or nuclear), mathematics, physics, or business.

The first two years of the curriculum contain the needed mathematics, science, and engineering science basics to prepare the student for the upper-level mechanical engineering courses. The junior and senior years include 12 hours of engineering electives which allows the student to concentrate in one of the available areas of specialization which include manufacturing, machine design, nuclear systems, or thermal systems.

For a detailed policy regarding transfer credit for the Mechanical Engineering programs, please see the [Department of Mechanical Engineering](#) page.

It is highly recommended that all freshmen engineering students starting fall 2017 purchase laptop computers. Laptop computer specifications are at: <https://www.atu.edu/engineering/specifications.php>.

Curriculum

The matrix below is a sample plan for all coursework required for this program.

Freshman

Fall	Credits
ENGL 1013 Composition I ¹	3
FAH 1XXX Fine Arts and Humanities Courses ¹	3
MATH 2914 Calculus I	4
CHEM 2124 General Chemistry I and CHEM 2120 General Chemistry I Lab	4
MCEG 1011 Introduction to Mechanical Engineering	1
TECH 1001 Orientation to the University	1
Total Hours	16

Spring	Credits
ENGL 1023 Composition II ¹	3
PHYS 2114 Calculus-Based Physics I and PHYS 2000 Physics Laboratory I	4
MATH 2924 Calculus II	4
MCEG 1002 Engineering Graphics	2
MCEG 2203 Computational Methods in Engineering	3

Spring	Credits
Total Hours	16

Sophomore

Fall	Credits
CHEM 2134 General Chemistry II and CHEM 2130 General Chemistry II Lab <i>or</i> PHYS 2124 Calculus-Based Physics II and PHYS 2010 Physics Laboratory II	4
MATH 2934 Calculus III	4
MCEG 2013 Statics	3
MCEG 2023 Engineering Materials	3
Total Hours	14

Spring	Credits
SS 1XXX Social Science Courses ¹	3
ELEG 2103 Electric Circuits I	3
MATH 3243 Differential Equations I	3
MCEG 2033 Dynamics	3
MCEG 3013 Mechanics of Materials	3
Total Hours	15

Junior

Fall	Credits
ELEG 2113 Electric Circuits II	3
MCEG 3313 Thermodynamics I	3
MCEG 3413 Fundamentals of Mechanical Design	3
MCEG 3442 Mechanical Laboratory I	2
ENGR Electives ^{3,6}	3
Total Hours	14

Spring	Credits
MCEG 4202 Engineering Design / ELEG 4202 Engineering Design	2
MCEG 4403 Mechanics of Fluids and Hydraulics	3
MCEG 4423 Machine Component Design	3
MATH Elective ⁵	3
ENGR Electives ^{3,6}	3

Spring	Credits
Total Hours	14

Senior

Fall	Credits
USHG 1XXX U.S. History and Government ¹	3
MCEG 3003 System Modeling and Analysis / ELEG 3003 System Modeling and Analysis	3
MCEG 4433 Thermodynamics II	3
MCEG 4442 Mechanical Laboratory II	2
MCEG 4491 Mechanical Design Project I	1
Technical Elective ^{4,6}	3
Total Hours	15

Spring	Credits
FAH 1XXX Fine Arts and Humanities Courses ¹	3
ELEG 4303 Control Systems	3
MCEG 4443 Heat Transfer	3
MCEG 4492 Mechanical Design Project II	2
ENGR Lab Elective ²	2
ENGR Electives ^{3,6}	3
Total Hours	16

¹See appropriate alternatives or substitutions in "[General Education Requirements](#)".

²3000-level or above ELEG or MCEG laboratory class.

³3000-level or above ELEG or MCEG course with minimum of three (3) hours at the 4000-level and approval of advisor.

⁴Technical elective course to be chosen with approval of advisor from list of eligible courses maintained in the departmental office.

⁵Mathematics elective course to be chosen with approval of advisor from list of eligible courses maintained in the departmental office. ⁶Seniors admitted to the Accelerated BSME to Masters of Engineering in Mechanical Engineering Program are able take up to 12 credit hours at the 5000-level that can count as 4000-level courses. The following courses may be used to fulfill the engineering and technical elective requirements in the BSME program: MCEG 5043, MCEG 5053, MCEG 5323, MCEG 5343, MCEG 5413, MCEG 5463, MCEG 5473, MCEG 5503, and MCEG 5993.