

Program: **Mechanical Engineering**
 Major: **Mechanical Engineering**
 Degree: **Bachelor of Science (B.S.)**

School: **Engineering and Physics**
 College: **Mathematics and Science**
 Major Code: **6270**

University Core (Total Listed 42-44)

For a full list of courses see [University Core](#).

- Courses from the major may apply to the areas marked in the University Core.

Written and Oral Communication 9

Quantitative Reasoning/Scientific Method 10-11

- Math..... 3
- Life Science 4
- Physical Science 3-4

Critical Inquiry and Aesthetic Analysis 6

- Aesthetic Analysis 3
- Critical Inquiry 3

American Historical and Political Analysis 6

- American National Government 3
- American History 3

• Cultural and Language Analysis..... 3-4

- Second Language 4
- OR
- Cultural Analysis..... 3

• Social and Behavioral Analysis..... 3

Life Skills 5

- Required Health Course..... 2
- Elective Life Skills 3

**Minimum
Required Hours**

Support Courses

Support Courses.....9-18

- PHIL 1123 Contemporary Moral Problems
- ECON 1103 Introduction to Economics
- FMKT 2323 Global Protocol and Diversity
(or Foreign Language)

- *MATH 1533 Precalculus-Algebra **OR**
- MATH 1513 College Algebra **OR** Placement Score **AND**
- *MATH 1593 Plane Trigonometry **OR** Placement Score

*A grade of 'C' or better is required for either MATH 1513 or MATH 1533 and MATH 1593 to take MATH 2313.

Students majoring in the Mechanical Engineering program are encouraged to complete the following course in high school.

- One year of high school physics **OR**
- PHY 1003 Introduction to Physics

Major Requirements

Mechanical Engineering94-99

Physics.....11

- Required courses:
- PHY 2014 Physics for Science and Engineering I and Lab
 - PHY 2114 Physics for Science and Engineering II and Lab
 - PHY 3883 Mathematical Physics I

Engineering..... 57

- Required courses:
- ENGR 1112 Introduction to Engineering and Laboratory
 - ENGR 1213 Engineering Computing and Laboratory
 - ENGR 2033 Statics
 - ENGR 2043 Dynamics
 - ENGR 2143 Strength of Materials
 - ENGR 2151 Strength of Materials Lab
 - ENGR 2203 Thermodynamics
 - ENGR 2303 Electrical Science
 - ENGR 2311 Electrical Science Laboratory
 - ENGR 3211 Thermal Engineering Laboratory
 - ENGR 3303 Engineering Probability and Statistics

**Minimum
Required Hours**

- #ENGR 3323 Signals and Systems
- ENGR 3331 Signals and Systems Laboratory
- #ENGR 3363 Mechanical Engineering Design
- #ENGR 3413 Materials Science
- #ENGR 3443 Fluid Mechanics
- #ENGR 3451 Fluid Mechanics Lab
- ENGR 3703 Computational Methods in Engineering
- #ENGR 4123 Heat Transfer
- #ENGR 4141 Heat Transfer Lab
- #ENGR 4533 Thermal Systems Design
- #ENGR 4803 Mechatronics & Laboratory
- #ENGR 4862 ME Senior Engineering Design I
- #ENGR 4892 Senior Engineering Design II

Mathematics 15

- Required courses:
- MATH 2313 Calculus 1
 - MATH 2323 Calculus 2
 - MATH 2333 Calculus 3
 - MATH 2343 Calculus 4
 - MATH 3103 Differential Equations

Chemistry.....5-10

- Required courses:
- CHEM 1315 Chemistry for Engineering and Lab **OR**
 - CHEM 1103 General Chemistry I **AND**
 - CHEM 1112 General Chemistry I Recitation/Laboratory **AND**
 - CHEM 1223 General Chemistry II **AND**
 - CHEM 1232 General Chemistry II Recitation/Laboratory

Guided Physics or Engineering Electives..... 6

- Selected from the following:
- ENGR 3153 Machine Dynamics
 - ENGR 3223 Digital Logic Design and Laboratory
 - ENGR 3803 Electrical Power Systems
 - ENGR 4103 Finite Element Analysis
 - ENGR 4153 Vibration
 - ENGR 4203 Refrigeration and Air Conditioning

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ENGR 4303 Control Systems
 ENGR 4313 Introduction to Computational Fluid Dynamics
 BME 4343 Biomechanics
 PHY 4163 Analytical Mechanics

(for Biomedical Engineering)
 CHEM 1103 General Chemistry I OR (for Biomedical Engineering)
 CHEM 1315 Chemistry for Engineering and Lab (for Electrical Engineering, Engineering Physics-Physics, Mechanical Engineering)

Admission into Engineering and Physics Upper Division is required.

Formal approval by the school Faculty Advisor and School Chair is required for admission. Preference is given to University of Central Oklahoma students. The student may enroll in no more than nine (9) hours of 3000 and 4000 level courses in the major prior to admission into upper division unless they secure formal approval from the School of Engineering and Physics.

Minimum Hours required 127*

*Total hours required for this major may exceed the minimum 124 credit hour institutional requirement and will vary according to course selection. It is recommended students complete high school algebra II, trigonometry, physics and two years of a second language in high school.

Minimum Grade Requirements

- 1. Average in (a) all college course work, and (b) course work at UCO 2.00**
- 2. A minimum grade of "C" must be earned in all courses in the major to count toward meeting degree requirements.**

Accelerated BS/MS

The School of Engineering and Physics offers a M.S. Engineering Physics - Mechanical Engineering major. Students in the B.S. Mechanical Engineering program are eligible to pursue, with approval, the M.S. Engineering Physics - Mechanical Engineering degree beginning in their senior year. Approved B.S. Mechanical Engineering students may take up to nine credit hours of 5000-level ENGR courses during their senior year of the B.S. program. These courses will count toward both the B.S. and M.S. degrees. A formal application to the M.S. Engineering Physics program and an approval from the School of Engineering and Physics are required. Requirements are located in the UCO Graduate Catalog under Engineering Physics - Mechanical Engineering.

Admission into Engineering and Physics Upper Division

Students seeking the B.S. in Biomedical Engineering, Electrical Engineering, Engineering Physics – Physics and Mechanical Engineering are required to make formal application to the Chairperson of the School of Engineering and Physics for admission into the upper division of each of these majors. Applications must be submitted to the School of Engineering and Physics on or before the last Monday of January for Fall admission and the last Monday of August for Spring admission.

Upper division admission is open to students meeting Engineering and Physics upper division admission requirements. To be admitted into upper division, the student must have:

- A minimum retention grade point average (GPA) of 2.00 in all course work completed by the time the student is formally admitted into upper division.
- Completed 60 semester credit hours by the time the student is formally admitted into upper division.
- Completed the following courses or their equivalent with a minimum grade of "C" by the time the student is formally admitted into upper division:

MATH 2313 Calculus 1
 MATH 2323 Calculus 2
 MATH 2333 Calculus 3
 MATH 2343 Calculus 4
 MATH 3103 Differential Equations (Recommended)
 PHY 2014 Physics for Science & Engineering I & Lab
 PHY 2114 Physics for Science & Engineering II & Lab
 ENGR 1112 Introduction to Engineering & Lab
 ENGR 1213 Engineering Computing & Lab
 ENGR 2033 Statics
 ENGR 2303 Electrical Science
 ENGR 2311 Electrical Science Lab
 ENGR 3303 Engineering Probability and Statistics (Recommended)
 CHEM 1112 General Chemistry I Recitation/Lab AND

Up to nine credit hours of the following courses can be used to satisfy both the B.S. Mechanical Engineering and the M.S. Engineering Physics - Mechanical Engineering programs:

ENGR 5023 Heat Transfer
 ENGR 5533 Thermal Systems Design
 ENGR 5803 Mechatronics & Laboratory

Accelerated BS/PSM

UCO's PSM (Professional Science Master's) in Computational Science has partnered with the B.S. in Mechanical Engineering so that approved students may take up to 10 credit hours of 5000-level ENGR courses during their senior year of the B.S. program. These courses will count toward both the B.S. and P.S.M. degrees. A formal application to the P.S.M. Computational Science program and an approval from the School of Engineering and Physics are required. Requirements are located in the UCO Graduate Catalog under Computational Science - Computational Engineering, P.S.M.

Up to 10 credit hours of the following courses can be used to satisfy both the B.S. Mechanical Engineering and the P.S.M. Computational Science - Computational Engineering:

ENGR 5023 Heat Transfer
 ENGR 5103 Finite Element Analysis
 ENGR 5333 Digital Signal Processing
 ENGR 5311 Digital Signal Processing Laboratory
 ENGR 5803 Mechatronics & Laboratory
 BME 5223 Biomedical Imaging