

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

Dept: **Engineering and Physics**
 College: **Mathematics and Science**
 Major Code: **6243**

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 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 Engineering Physics 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

Engineering Physics - Physics 91-96

Physics 23

- Required courses 17
- PHY 2014 Physics for Science and Engineering I and Lab
- PHY 2114 Physics for Science and Engineering II and Lab
- PHY 3103 Modern Physics
- PHY 3883 Mathematical Physics I
- PHY 4203 Quantum Mechanics

Physics or Engineering Elective 3
 4000-level PHY, ENGR, or BME course

Physics Elective 3
 3000-level or 4000-level PHY course

Engineering 48

- Required courses 45
- ENGR 1112 Introduction to Engineering and Laboratory
- ENGR 1213 Engineering Computing and Laboratory
- ENGR 2033 Statics
- ENGR 2043 Dynamics

**Minimum
Required Hours**

- ENGR 2203 Thermodynamics
- ENGR 2303 Electrical Science
- ENGR 2311 Electrical Science Laboratory
- #ENGR 3183 Electromagnetic Fields I
- ENGR 3303 Engineering Probability and Statistics
- #ENGR 3323 Signals and Systems
- ENGR 3331 Signals and Systems Laboratory
- ENGR 3403 Analog Electronics
- ENGR 3421 Analog Electronics Laboratory
- #ENGR 3443 Fluid Mechanics
- ENGR 3703 Computational Methods in Engineering
- ENGR 4263 Engineering Optics
- #ENGR 4852 EP Senior Engineering Design I
- #ENGR 4892 Senior Engineering Design II

Engineering Electives 3
 Any 2000-level, 3000-level, or 4000-level ENGR or BME course

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

Admission into Engineering and Physics Upper Division is required.

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Electives to bring total to..... 124*

*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.

For other regulations pertaining to graduation, see [Academic Degree Requirements](#).

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 Department of Engineering and Physics for admission into the upper division of each of these majors. Applications must be submitted to the Department 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 (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)

Formal approval by the department Faculty Advisor and Department 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 Department of Engineering and Physics.

Accelerated BS/MS

The Department of Engineering and Physics offers a M.S. Engineering Physics - Physics major. Students in the B.S. Engineering Physics program are eligible to pursue, with approval, the M.S. Engineering Physics - Physics degree beginning in their senior year. Approved B.S. Engineering Physics 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 Department of Engineering and Physics are required. Requirements are located in the UCO Graduate Catalog under Engineering Physics - Physics.

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

PHY 5443 Quantum Mechanics
 A 5000-level PHY, ENGR, or BME course
 A 5000-level PHY course

Accelerated BS/PSM

UCO's PSM (Professional Science Master's) in Computational Science has partnered with the B.S. in Engineering Physics 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 Department 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. Engineering Physics 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
ENGR	5443	Fluid Dynamics
PHY	5443	Quantum Mechanics