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

School: 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

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 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

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

<table>
<thead>
<tr>
<th>Subject</th>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>ENGR 2203 Thermodynamics</td>
</tr>
<tr>
<td></td>
<td>ENGR 2303 Electrical Science</td>
</tr>
<tr>
<td></td>
<td>ENGR 2311 Electrical Science Laboratory</td>
</tr>
<tr>
<td></td>
<td>#ENGR 3183 Electromagnetic Fields I</td>
</tr>
<tr>
<td></td>
<td>#ENGR 3303 Engineering Probability and Statistics</td>
</tr>
<tr>
<td></td>
<td>#ENGR 3323 Signals and Systems</td>
</tr>
<tr>
<td></td>
<td>ENGR 3331 Signals and Systems Laboratory</td>
</tr>
<tr>
<td></td>
<td>ENGR 3403 Analog Electronics</td>
</tr>
<tr>
<td></td>
<td>ENGR 3421 Analog Electronics Laboratory</td>
</tr>
<tr>
<td></td>
<td>#ENGR 3443 Fluid Mechanics</td>
</tr>
<tr>
<td></td>
<td>ENGR 3703 Computational Methods in Engineering</td>
</tr>
<tr>
<td></td>
<td>ENGR 4263 Engineering Optics</td>
</tr>
<tr>
<td></td>
<td>#ENGR 4852 EP Senior Engineering Design I</td>
</tr>
<tr>
<td></td>
<td>#ENGR 4892 Senior Engineering Design II</td>
</tr>
<tr>
<td></td>
<td>Engineering Electives ........................................ 3</td>
</tr>
<tr>
<td></td>
<td>Any 2000-level, 3000-level, or 4000-level ENGR or BME course</td>
</tr>
</tbody>
</table>

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.

- CONTINUED ON NEXT PAGE -
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.

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 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 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.

Accelerated BS/MS

The School 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 School 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 School of Engineering and Physics are required. Requirements are located in the UCO Graduate Catalog under Computational Science - Computational Engineering.

Up to ten 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