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

## University Core (Total Listed 42-44)

Specific courses within the University Core are listed on pages 96-97.
- 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

<table>
<thead>
<tr>
<th>Support Courses</th>
<th>Required Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 1123 Contemporary Moral Problems</td>
<td>9-18</td>
</tr>
<tr>
<td>ECON 1103 Introduction to Economics</td>
<td></td>
</tr>
<tr>
<td>FMKT 2323 Global Protocol and Diversity (or Foreign Language)</td>
<td></td>
</tr>
</tbody>
</table>

* A grade of ‘C’ or better is required for both MATH 1533 and 1593 to take MATH 2313.

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

- One year High School Physics OR
- PHY 1003 Introduction to Physics

## Major Requirements

### Biomedical Engineering ...................................................... 96-98

#### Biology .............................................................................. 11

- BIO 1204 Biology I for Majors
- BIO 2203 Cell Biology
- BIO 2604 Human Physiology and Laboratory

#### Chemistry ............................................................................ 5

- CHEM 1103 General Chemistry I
- CHEM 1112 General Chemistry I Recitation/Laboratory

#### Engineering ........................................................................ 48

- ENGR 1112 Introduction to Engineering and Laboratory
- ENGR 1213 Engineering Computing and Laboratory
- BME 1311 Introduction to Biomedical Engineering
- ENGR 2033 Statics
- ENGR 2303 Electrical Science
- ENGR 2311 Electrical Science Laboratory
- #BME 3043 Biomaterials
- BME 3113 Principles of Biomedical Engineering

### 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

<table>
<thead>
<tr>
<th>Mathematics</th>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2313</td>
<td>Calculus 1</td>
</tr>
<tr>
<td>MATH 2323</td>
<td>Calculus 2</td>
</tr>
<tr>
<td>MATH 2333</td>
<td>Calculus 3</td>
</tr>
<tr>
<td>MATH 2343</td>
<td>Calculus 4</td>
</tr>
<tr>
<td>MATH 3103</td>
<td>Differential Equations</td>
</tr>
</tbody>
</table>

### Physics ........................................................................ 8

- Required courses:
  - PHY 2014 Physics for Science and Engineering I and Laboratory
  ^ A grade of “C” or better must be earned in PHY 2114.

### Biomedical Engineering Elective .................................... 3-6

- Any 3000/4000 level BME, PHY or ENGR course with the following exceptions: PHY 3014, 3044, 3054 or 3503.

  Students in Concentration A are required to have 3 credit hours from Biomedical Engineering electives. Students in Concentration B are required to have 6 credit hours from Biomedical Engineering electives.
Minimum Required Hours

- CONTINUED FROM PREVIOUS PAGE -

Complete all the courses from one of the following concentrations:

Concentration A: (courses in preparation for Pre-Med fields)
- CHEM 1223 General Chemistry II
- CHEM 1232 General Chemistry II Recitation/Laboratory
- CHEM 3303 Organic Chemistry I

Concentration B: (courses in preparation for Instrumentation fields)
- PHY 3883 Mathematical Physics I

The number of credits needed to meet degree requirements exceeds 124 hours and will vary according to course selection.

The following courses are strongly recommended electives:
- BME 4243 Modeling and Analysis of Biomedical Systems
- #ENGR 3443 Fluid Mechanics
- CHEM 3403 Biochemistry I
- CHEM 3323 Organic Chemistry II (for Concentration A)
- #ENGR 3183 Electromagnetic Fields I (for Concentration B)

# Admission into Engineering and Physics Upper Division is required.

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 pages 67-68 of the 2017-2018 catalog.

Admission into Engineering and Physics Upper Division

Students seeking the B.S. in Biomedical Engineering, Engineering Physics – Electrical Engineering, Engineering Physics – Mechanical Engineering, and Engineering Physics – Physics 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 Engineering Physics-Electrical Engineering, Mechanical Engineering, and Physics)

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.