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

Debt: Engineering and Physics
College: Mathematics and Science
Major Code: 6220

University of Central Oklahoma Undergraduate Catalog 2019-2020

University Core  (Total Listed 42-44)

Specific courses within the University Core are listed on pages 95-96.
• 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 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
Required courses:
BIO  1204 Biology for Majors: Principles
BIO  2203 Cell Biology
BIO  2604 Human Physiology and Laboratory

Chemistry .............................................................................. 5
Required courses:
CHEM 1103 General Chemistry I
CHEM 1112 General Chemistry I Recitation/Laboratory

Engineering ........................................................................... 48
Required courses:
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

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

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

BME  3113 Principles of Biomedical Engineering
ENGR 3223 Digital Logic Design and Laboratory
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
#BME  4132 Biomedical Engineering Laboratory
#BME  4233 Biomedical Instrumentation
#BME  4343 Biomechanics
#ENGR 4882 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

Physics ........................................................................ 8
Required courses:
PHY   2014 Physics for Science and Engineering I and
Laboratory
^ PHY   2114 Physics for Science and Engineering II 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.

- CONTINUED ON NEXT PAGE -
Program: Biomedical Engineering - continued
Major: Biomedical Engineering
Degree: Bachelor of Science (B.S.)

Minum 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 66-67 of the 2019-2020 catalog.

Admission into Engineering and Physics Upper Division

Students seeking the B.S. in Biomedical Engineering, Electrical Engineering, 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.