

# BIOENGINEERING

Fall Quarter	Units	Winter Quarter	Units	Spring Quarter	Units
<b>FIRST YEAR</b>					
BIEN 001 <i>Freshmen Seminar**</i>	1	BIOL 005A & BIOL 05LA <i>Cell &amp; Molecular Biology &amp; Lab</i>	5	BIOL 005B <i>Organismal Biology</i>	4
CHEM 001A & CHEM 01LA <i>General Chemistry &amp; Lab</i>	5	CHEM 001B & CHEM 01LB <i>General Chemistry &amp; Lab</i>	5	CHEM 001C & CHEM 01LC <i>General Chemistry &amp; Lab</i>	5
ENGL 001A <i>Beginning Composition</i>	4	ENGL 001B <i>Intermediate Composition</i>	4	ENGL 001C or Alternate <i>Applied Intermediate Composition</i>	4
MATH 009A <i>First Year Calculus</i>	4	MATH 009B <i>First Year Calculus</i>	4	MATH 009C <i>First Year Calculus</i>	4
<b>SECOND YEAR</b>					
BIEN 010 <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Offered Fall and Winter</span> <i>Overview of Bioengineering</i>	4	CHEM 008/08LA <i>Organic Chemistry</i>	4	CHEM 008B/08LB <i>Organic Chemistry</i>	4
MATH 046 <i>Differential Equations</i>	4	CS 009A <i>Data-oriented Intro to Computing I</i>	4	MATH 010B <i>Multivariable Calculus</i>	4
PHYS 040A <i>Physics (Mechanics)</i>	5	MATH 010A <i>Multivariable Calculus</i>	4	PHYS 040C <i>Physics (Electricity/Magnetism)</i>	5
Breadth _____ <i>Humanities/Social Sciences</i>	4	PHYS 040B <i>Physics (Heat/Waves/Sound)</i>	5	Breadth _____ <i>Humanities/Social Sciences</i>	4
<b>THIRD YEAR</b>					
BIEN 101 <i>Quantitative Biochemistry***</i>	4	BIEN 105 <i>Circulation Physiology</i>	4	BIEN 115 <i>Quantitative Physiology</i>	4
BIEN 110 <i>Biomechanics of the Human Body</i>	4	BIEN 125 <i>Biotechnology &amp; Molecular Engr.</i>	4	BIEN 120 <i>Biosystems &amp; Signals Analysis</i>	4
BIEN 111 <i>Stat. Methods &amp; Research Design</i>	4	BIEN/CEE 140A <i>Biomaterials</i>	4	BIEN 130 <i>Bioinstrumentation</i>	4
EE 005 <i>Circuits and Electronics</i>	4	Technical Elective* or Breadth _____	4	BIEN 130L <i>Bioinstrumentation Lab</i>	2
<b>FOURTH YEAR</b>					
BIEN 175A <i>Senior Design</i>	2	BIEN 175B <i>Senior Design</i>	4	BIEN 175C <i>Senior Design</i>	4
BIEN 135 <i>Biophysics &amp; Biothermodynamics</i>	4	Technical Elective* _____	4	Technical Elective* _____	4
BIEN 155 <i>Biotechnology Lab</i>	2	Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
Technical Elective* _____	4	Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4

To earn a B.S., you must complete all College and University requirements. For a full list of requirements, go to [catalog.ucr.edu](http://catalog.ucr.edu).

**ENGLISH COMPOSITION**

A C or better is required in all English Composition courses to satisfy the graduation requirement. Please consult with your Academic Advisor for ENGL 1C alternatives.

**BREADTH REQUIREMENTS**

For an approved list of Breadth courses, go to <http://student.engr.ucr.edu/>

**Humanities: (3 courses)**

- A. World History: \_\_\_\_\_
- B. Fine Arts, Lit., Phil. or Rlst: \_\_\_\_\_
- C. Human Persp. on Science: \_\_\_\_\_

**Social Sciences: (3 courses)**

- A. Econ. or Posc.: \_\_\_\_\_
- B. Anth., Psys, or Soc.: \_\_\_\_\_
- C. General Social Science: \_\_\_\_\_

**Ethnicity: (1 course)**

- 1. \_\_\_\_\_

**Upper Division: (2 courses)**

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_

**\* TECHNICAL ELECTIVES**

Technical Electives may be offered throughout the Academic Year. Consult with your Faculty Advisor about potential offerings. See approved technical electives on

With the exception of BIEN 010, **BIEN courses are offered only in the quarter shown.**

\*\* BIEN 001 is required for first-year students. Transfer students should consult with your Academic Advisor. Total Units: 190  
 \*\*\* BIEN 101 can be replaced by BCH 100 for students considering graduate/professional programs in health professions (premeds). Max Units: 228

Course Plan is subject to change.

## Bioengineering Technical Electives

You must complete 4 courses (at least 16 units) of Technical Elective coursework. Acceptable courses in the Department of Bioengineering are listed below.

<u>Course</u>	<u>Course Title (Units)</u>
BIEN/MSE 136	Tissue Engineering (4)
BIEN 137	Advanced Biomechanics (4)
BIEN 138	Fundamental Principles of Wound Repair (4)
BIEN/CEE 140B	Biomaterials (4)
BIEN 142	Introductory Biomedical Optical Imaging (4)
BIEN/CEE 159	Dynamics of Biological Systems (4)
BIEN 160	Biomedical Imaging (4)
BIEN 165	Biomolecular Engineering (4)
BIEN 166	Bioinspired Engineering for Sustainable Energy (4)
BIEN 167	Medical Diagnostics (4)
BIEN 190 *	Bioengineering Analysis and Modeling (4) (future BIEN 168)

*\* In Fall 2022 only, offered as a special section of BIEN 190; consult with your Academic Advisor to register.*

BIEN 190 \*\*      Human-Technology Interaction (4)

*\*\* In Spring 2023 only, offered as a special section of BIEN 190; consult with your Academic Advisor to register.*

You may meet one of the four Technical Elective requirement courses with an Upper Division course from other departments in the College of Engineering; however for some of these courses you may need to obtain permission of the instructor for enrollment.

If you are conducting undergraduate research in a lab in the College of Engineering, you may be eligible to conduct research under BIEN 190 (Special Studies) to meet one of your four Technical Elective requirements. Consult with your research advisor and the Faculty Advisor for more information.