

# Biomedical Engineering (Pre-Medicine)

128 credit hours total

| YEAR 1   |   | YEAR 2  |   | YEAR 3   |   | YEAR 4   |   |
|--|---|---|---|--|---|--|---|
| FALL   | SPRING  | FALL  | SPRING  | FALL   | SPRING  | FALL   | SPRING  |
| <b>*MATH 220 (4)</b><br>Analytic Geometry and Calculus I<br>KSC-3    | <b>*MATH 221 (4)</b><br>Analytic Geometry and Calculus II<br>PR: MATH 220 ≥ C | <b>MATH 340 (4)</b><br>Elementary Differential Equations<br>PR: MATH 221 ≥ C      | <b>MATH 222 (4)</b><br>Analytic Geometry and Calculus III<br>PR: MATH 221 ≥ C | <b>•BME 430 (3)</b><br>Biomaterials<br>PR: BIOL 198, CHM 230   | <b>ECE 512 (3)</b><br>Linear Systems<br>PR: ECE 410 or 519, MATH 340, ECE 540                                     | <b>•BME 590 (3)</b><br>Senior Design Experience I<br>PR: BME 491, ECE 540, and ENGL 200    | <b>•BME 591 (2)</b><br>Senior Design Experience II<br>PR: BME 590 |
| <b>CHM 210 (4)</b><br>Chemistry I                                    | <b>CHM 230 (4)</b><br>Chemistry II<br>PR: CHM 210                             | <b>•BME 390 (2)</b><br>Skill Development Experience<br>PR: CHM 210, BME 200       | <b>BIOL 198 (4)</b><br>Principles of Biology                                  | <b>BIOL 441 (4)</b><br>Human Body I<br>PR: BIOL 198 >= B<br>PR: CHM 210 ≥ B<br>PR: Cumulative GPA ≥ 3.0<br>PR: SO standing | <b>BIOL 442 (4)</b><br>Human Body II<br>PR: BIOL 441 ≥ C  | <b>•BME 575 (3)</b><br>Clinical Systems Engineering<br>PR: ECE 540                         | <b>•BME 674 (3)</b><br>Medical Imaging<br>PR: ECE 512             |
| <b>DEN 160 (1)</b><br>College of Engineering Orientation             | <b>*PHYS 213 (5)</b><br>Engineering Physics I<br>KSC-4<br>PR/CO: MATH 220     | <b>*PHYS 214 (5)</b><br>Engineering Physics II<br>PR: PHYS 213<br>PR/CO: MATH 221 | <b>CHM 531 (3)</b><br>Organic Chemistry I<br>PR: CHM 230 or CHM 250           | <b>ECE 540 (3)</b><br>Applied Scientific Computing for Engineers<br>PR: STAT 510 and CIS 209 or CIS 200                    | <b>•BME 490 (2)</b><br>Undergraduate BME Design Experience<br>PR: PHYS 214, BME 200<br>PR/CO: BIOL 441 or KIN 360 | <b>•ECE 772 (2)</b><br>Theory and Techniques of Bioinstrumentation<br>PR/CO: ECE 773       | <b>* Elective (3)</b><br>Social and Behavioral Sciences<br>KSC-5  |
| <b>DEN 161 (1)</b><br>Engineering Problem Solving<br>PR/CO: MATH 150 | <b>•BME 200 (3)</b><br>Introduction to Biomedical Engineering                 | <b>CIS 209 (3)</b><br>Computer Programming for Engineers<br>PR: MATH 220 ≥ C      | <b>ECE 519 (3)</b><br>Electric Circuits for Engineers<br>PR: PHYS 214         | <b>* Elective (3)</b><br>Social and Behavioral Sciences<br>KSC-5   | <b>•BME 470 (3)</b><br>Biomedical Device Components<br>PR: ECE 519  | <b>•ECE 773 (1)</b><br>Bioinstrumentation Design Laboratory<br>PR: ECE 502, PR/CO: ECE 772 | <b>* Elective (3)</b><br>Arts and Humanities<br>KSC-6             |
| <b>*ENGL 100 (3)</b><br>Expository Writing I<br>KSC-1                |   | <b>ECE 241 (3)</b><br>Introduction to Electrical and Computer Engineering         | <b>ME 212 (2)</b><br>Engineering Graphics<br>PR/CO: MATH 205 or 220           | <b>*ENGL 200 (3)</b><br>Expository Writing II<br>KSC-1<br>PR: ENGL 100   | <b>BIOL 455 (4)</b><br>General Microbiology<br>PR: BIOL 198, one CHM course                                       | <b>CHM 532 (2)</b><br>Organic Chemistry Laboratory<br>PR/CO: CHM 531                       | <b>* Elective (3)</b><br>Arts and Humanities<br>KSC-6             |
| <b>*COMM 106 (3)</b><br>Public Speaking<br>KSC-2                     |   |   |   |  |   | <b>* Elective (3)</b><br>Institutional<br>KSC-7  | <b>* Elective (3)</b><br>Institutional<br>KSC-7                   |

(16 credit hours)

(16 credit hours)

(17 credit hours)

(16 credit hours)





(16 credit hours)

(16 credit hours)

(14 credit hours)

(17 credit hours)

## KEY

|   |   |  |   |
|---|---|--|---|
|  = Prerequisite for another course | PR = Prerequisite requirement   | PR/CO = Prerequisite or concurrent requirement   |  = Class applies as specialization |
| * = K-State Core (KSC) course   |  = See department approved electives |  = Only offered in the semester shown |   |

# Biomedical Engineering Curriculum Notes

For the good and benefit of the student and their future employer, the ECE department enforces a C-prerequisite policy for all courses listed by number in the curriculum and for any in-major technical elective course applied toward the degree. A grade of C or better must be earned in all prerequisites to such a course before enrolling in that course.

## Technical Electives

Emphasis electives must come from lists of approved courses.

No more than 12 credit hours of courses in electrical engineering, computer engineering, or biomedical engineering may be transferred to Kansas State University for credit toward a bachelor's degree in biomedical engineering. Further, those courses selected for transfer credit must be equivalent to courses in the list below and must be such that the prerequisites for the listed course are also satisfied. Any courses transferred must be taken from ABET accredited programs: ECE 241, ECE 512, ECE 519, ECE 540, ECE 772, ECE 773, BME 200, BME 390, BME 430, BME 470, BME 490, BME 491, BME 575, BME 590, BME 591, BME 674.

Students who participate in exchange programs or transfer in from outside the United States may request waivers of this policy. Waivers must be obtained in advance of the exchange semester.

## K-State Core

The K-State Core (KSC) is the university's version of the systemwide general education framework established by the Kansas Board of Regents.

**KSC requirement 1** – English (6 hours)

**KSC requirement 2** – Communications (3 hours)

**KSC requirement 3** – Math and Statistics (3 hours)

**KSC requirement 4** – Natural and Physical Sciences (4-5 hours)

**KSC requirement 5\*** – Social and Behavioral Sciences (6 hours)

**KSC requirement 6\*** – Arts and Humanities (6 hours)

**KSC requirement 7** – Institutional Electives (6 hours)

To view course lists for each requirement, visit [k-state.edu/provost/kstate-core](https://k-state.edu/provost/kstate-core).

*\*Requires two courses from two different subject areas.*