# Biomedical Engineering (Sensors and Devices)

**Year 1**

**FALL**
- **MATH 220 (4)**: Analytic Geometry and Calculus I
  - KSC-3
- **CHM 210 (4)**: Chemistry I
  - PR: CHM 210
- **DEN 160 (1)**: College of Engineering Orientation
- **ENGL 100 (3)**: Expository Writing I
  - KSC-1
- **COMM 106 (3)**: Public Speaking
  - KSC-2

**SPRING**
- **MATH 221 (4)**: Analytic Geometry and Calculus II
  - KSC-3
- **CHM 230 (4)**: Chemistry II
  - PR: CHM 210
- **BME 200 (3)**: Introduction to Biomedical Engineering
  - PR: MATH 150
- **PHYS 213 (5)**: Engineering Physics I
  - KSC-4
- **ECE 241 (3)**: Introduction to Electrical and Computer Engineering

**Year 2**

**FALL**
- **MATH 340 (4)**: Elementary Differential Equations
  - PR: MATH 220 ≥ C
- **BME 390 (2)**: Skill Development Experience
  - PR: CHM 210, BME 200
- **CHM 531 (3)**: Organic Chemistry I
  - PR: PHYS 213 or MATH 221
- **CIS 209 (3)**: Computer Programming for Engineers
  - PR: MATH 220 ≥ C
- **ECE 241 (3)**: Introduction to Electrical and Computer Engineering
  - PR: MATH 205 or 220

**SPRING**
- **MATH 222 (4)**: Analytic Geometry and Calculus III
  - PR: MATH 221 ≥ C
- **BIOL 198 (4)**: Principles of Biology
  - PR: CHM 210 or BME 200
- **ECE 519 (3)**: Electric Circuits for Engineers
  - PR: PHYS 214
- **ENGL 200 (3)**: Expository Writing II
  - KSC-1

**Year 3**

**FALL**
- **MATH 430 (3)**: Biomaterials
  - PR: BIOL 198, CHM 230
- **BIOL 441 (4)**: Human Body I
  - PR: BIOL 198 ≥ B
  - PR: CHM 210 ≥ B
  - PR: Cumulative GPA ≥ 3.0
  - PR: SO standing
- **BIOL 442 (4)**: Human Body II
  - PR: BIOL 441 ≥ C
- **ECE 540 (3)**: Applied Scientific Computing for Engineers
  - PR: PHYS 214, BME 200
  - PR: MATH 213 or CIS 209
  - PR: MATH 221 ≥ C
  - PR: ENGL 100
  - KSC-5

**SPRING**
- **BME 490 (2)**: Medical Imaging
  - PR: ECE 773
- **BME 470 (3)**: Biomedical Device Components
  - PR: ECE 410 or 519, MATH 213, MATH 340, ECE 540
- **ECE 773 (1)**: Bioinstrumentation Design Laboratory
  - PR: ECE 502, PR/CO: ECE 772
- **ENGL 200 (3)**: Expository Writing II
  - PR: ENGL 100

**Year 4**

**FALL**
- **BME 590 (3)**: Senior Design Experience I
  - PR: BME 490, ECE 540, and ENGL 200
- **ECE 512 (3)**: Linear Systems
  - PR: ECE 410 or 519
- **BME 591 (2)**: Senior Design Experience II
  - PR: BME 590
- **BME 674 (3)**: Medical Imaging
  - PR: ECE 410 or 519

**SPRING**
- **BME 674 (3)**: Medical Imaging
  - PR: ECE 410 or 519
- **Elective (3)**: Social and Behavioral Sciences
  - KSC-6
- **Elective (3)**: Arts and Humanities
  - KSC-6
- **Elective (3)**: Social and Behavioral Sciences
  - KSC-6

**Elective (3)**: Institutional
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### Key
- ☑ = Prerequisite for another course
- ☑ = Prerequisite requirement
- 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

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Flowchart is for advising purposes only. Students are responsible for complying with University Catalog requirements.
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.

*Requires two courses from two different subject areas.