Biomedical Engineering (Computation)

128 credit hours total

YEAR 1

FALL

***MATH 220 (4)**
Analytic Geometry and Calculus I
KSC-3

CHM 210 (4)
Chemistry I

DEN 160 (1)
College of Engineering Orientation

DEN 161 (1)
Engineering Problem Solving
PR/CO: MATH 150

***ENGL 100 (3)**
Expository Writing I
KSC-1

***COMM 106 (3)**
Public Speaking
KSC-2

(16 credit hours)

SPRING

***MATH 221 (4)**
Analytic Geometry and Calculus II
PR: MATH 220 ≥C

CHM 230 (4)
Chemistry II
PR: CHM 210

***PHYS 213 (5)**
Engineering Physics I
KSC-4
PR/CO: MATH 220

●BME 200 (3)
Introduction to Biomedical Engineering

CIS 116 (1)
Introduction to Computer Science

(17 credit hours)

YEAR 2

FALL

MATH 340 (4)
Elementary Differential Equations
PR: MATH 221 ≥ C

●BME 390 (2)
Skill Development Experience
PR: CHM 210, BME 200

***PHYS 214 (5)**
Engineering Physics II
PR: PHYS 213
PR/CO: MATH 221

CIS 200 (4)
Programming Fundamentals
PR: CIS 116
PR/CO: MATH 200 or 205

(15 credit hours)

SPRING

MATH 222 (4)
Analytic Geometry and Calculus III
PR: MATH 221 ≥ C

BIOL 198 (4)
Principles of Biology

CHM 531 (3)
Organic Chemistry I
PR: CHM 230 or CHM 250

ECE 519 (3)
Electric Circuits for Engineers
PR: PHYS 214

ME 212 (2)
Engineering Graphics
PR/CO: MATH 205 or 220

(16 credit hours)

YEAR 3

FALL

●BME 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

ECE 540 (3)
Applied Scientific Computing for Engineers
PR: STAT 510 and CIS 209 or CIS 200

CIS 300 (3)
Data and Program Structures
PR: CIS 200, MATH 220 or 205

***ENGL 200 (3)**
Expository Writing II
KSC-1
PR: ENGL 100

(16 credit hours)

SPRING

ECE 512 (3)
Linear Systems
PR: ECE 410 or 519, MATH 340, ECE 540

BIOL 442 (4)
Human Body II
PR: BIOL 441 ≥C

●BME 490 (2)
Undergraduate BME Design Experience
PR: PHYS 214, BME 200
PR/CO: BIOL 441 or KIN 360

●BME 470 (3)
Biomedical Device Components
PR: ECE 519

CIS 308 (3)
C Language Laboratory
PR: CIS 300

*** Elective (3)**
Social and Behavioral Sciences
KSC-5

(16 credit hours)

YEAR 4

FALL

●BME 590 (3)
Senior Design Experience I
PR: BME 491, ECE 540, and ENGL 200

●BME 575 (3)
Clinical Systems Engineering
PR: ECE 540

●ECE 772 (2)
Theory and Techniques of Bioinstrumentation
PR/CO: ECE 773

●ECE 773 (1)
Bioinstrumentation Design Laboratory
PR: ECE 502, PR/CO: ECE 772

CIS 400 (3)
Object-Oriented Design, Implementation and Testing
PR: CIS 300

*** Elective (3)**
Institutional
KSC-7

(15 credit hours)

SPRING

●BME 591 (2)
Senior Design Experience II
PR: BME 590

●BME 674 (3)
Medical Imaging
PR: ECE 512

*** Elective (3)**
Social and Behavioral Sciences
KSC-5

*** Elective (3)**
Arts and Humanities
KSC-6

*** Elective (3)**
Arts and Humanities
KSC-6

*** Elective (3)**
Institutional
KSC-7

(17 credit hours)

KANSAS STATE UNIVERSITY | Carl R. Ice College of Engineering

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

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.*