

# Biological Systems Engineering (Biological Option)

126 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 222 (4)</b><br>Analytic Geometry and Calculus III<br>PR: MATH 221 ≥ C           | <b>MATH 340 (4)</b><br>Elementary Differential Equations<br>PR: MATH 221 ≥ C          | <b>ME 513 (3)</b><br>Thermodynamics I<br>PR: MATH 222, PHYS 213   | <b>BAE 331 (1)</b><br>Professional Practice for Biological Systems Engineering Design                         | <b>BAE 536 (3)</b><br>Biological Systems Engineering Senior Design I<br>PR: BAE 331, PR/CO: ME 533 or BAE 545 or BAE 560 | <b>BAE 636 (1)</b><br>Biological Systems Engineering Senior Design II<br>PR: BAE 536                         |
| <b>CHM 210 (4)</b><br>Chemistry I                                    | <b>*CHM 230 (4)</b><br>Chemistry II<br>PR: CHM 210                            | <b>CHM 350 (3)</b><br>General Organic Chemistry<br>PR: CHM 230                          | <b>PHYS 214 (5)</b><br>Engineering Physics II<br>PR: PHYS 213<br>PR/CO: MATH 221      | <b>ME 571 (3)</b><br>Fluid Mechanics<br>PR: ME 512 or CE 530  | <b>BAE 645 (3)</b><br>Bioenvironmental Reaction Engineering<br>PR: BAE 345 or CHE 354 and CHE 355 and BAE 445 | <b>BAE 545 (3)</b><br>Biological Process Engineering<br>PR/CO: CHE 530 -OR- ME 571                                       | <b>BAE 640 (3)</b><br>Instrumentation and Control for Biological Systems<br>PR: ECE 410 or ECE 519, MATH 340 |
| <b>DEN 160 (1)</b><br>College of Engineering Orientation             | <b>BIOL 198 (4)</b><br>Principles of Biology                                  | <b>*PHYS 213 (5)</b><br>Engineering Physics I<br>KSC-4<br>PR: MATH 220                  | <b>CE 530 (3)</b><br>Statics and Dynamics<br>PR: MATH 222, PHYS 213                   | <b>BIOL 255 (4)</b><br>General Microbiology<br>PR: BIOL 198   | <b>ECE 519 (3)</b><br>Electric Circuits for Engineers<br>PR: PHYS 214   | <b>▲ Elective (3)</b><br>Engineering   | <b>▲ Elective (3)</b><br>Engineering   |
| <b>DEN 161 (1)</b><br>Engineering Problem Solving<br>PR/CO: MATH 150 | <b>*ENGL 100 (3)</b><br>Expository Writing I<br>KSC-1                         | <b>BAE 460 (3)</b><br>Computational and Statistical Tools for Engineers<br>PR: MATH 221 | <b>BAE 345 (2)</b><br>Properties of Biological Materials<br>PR: PHYS 213              | <b>BAE 445 (3)</b><br>Biological Engineering Fundamentals<br>PR: BIOL 198, BAE 345 or CE 533 -OR- CHE 354,355 | <b>*ENGL 200 (3)</b><br>Expository Writing II<br>KSC-1<br>PR: ENGL 100  | <b>▲ Elective (3)</b><br>Track   | <b>▲ Elective (3)</b><br>Track   |
| <b>*COMM 106 (3)</b><br>Public Speaking<br>KSC-2                     |   |   | <b>BAE 346 (1)</b><br>Properties of Biological Materials Laboratory<br>PR/CO: BAE 345 | <b>*Elective (3)</b><br>Arts and Humanities<br>KSC-6  | <b>▲ Elective (3)</b><br>Engineering  | <b>*Elective (3)</b><br>Social and Behavioral Sciences<br>KSC-5  | <b>*Elective (3)</b><br>Arts and Humanities<br>KSC-6   |
| <b>*Elective (3)</b><br>Social and Behavioral Sciences<br>KSC-5      |   |   | <b>IMSE 530 (2)</b><br>Engineering Economic Analysis<br>PR: MATH 220                  |   | <b>*Elective (3)</b><br>Institutional<br>KSC-7  |  | <b>*Elective (3)</b><br>Institutional<br>KSC-7   |
| <b>BAE 020 (0)</b>   | <b>BAE 020 (0)</b>  | <b>BAE 020 (0)</b>  | <b>BAE 020 (0)</b>  | <b>BAE 020 (0)</b>  | <b>BAE 020 (0)</b>  | <b>BAE 020 (0)</b>   | <b>BAE 020 (0)</b>   |
| (16 credit hours)  | (14 credit hours)   | (15 credit hours)   | (17 credit hours)   | (16 credit hours)   | (16 credit hours)   | (15 credit hours)  | (16 credit hours)  |

## KEY

■ = Prerequisite for another course    PR = Prerequisite requirement    PR/CO = Prerequisite or concurrent requirement  
\* = K-State Core (KSC) course    ▲ = See department approved electives    ● = Only offered in the semester shown

# Biological Systems Engineering Curriculum Notes

Students who satisfy all or part of K-State Core Institutional Electives (KSC-7) with courses that satisfy other degree requirements may use additional unrestricted electives to meet the degree requirement of 126 credit hours.

## Track Electives

Track electives are to be chosen from an approved departmental list of courses. Three of the 6 credit hours must be engineering courses.

Additional information is available at  
[bae.k-state.edu/academics/undergraduate/bse/bse-track-electives.pdf](http://bae.k-state.edu/academics/undergraduate/bse/bse-track-electives.pdf).

## 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](http://k-state.edu/provost/kstate-core).

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