

# Biological Systems Engineering (Machine Systems 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> Analytic Geometry and Calculus I KSC-3	<b>*MATH 221 (4)</b> Analytic Geometry and Calculus II PR: MATH 220 ≥ C	<b>MATH 222 (4)</b> Analytic Geometry and Calculus III PR: MATH 221 ≥ C	<b>MATH 340 (4)</b> Elementary Differential Equations PR: MATH 221 ≥ C	<b>ME 513 (3)</b> Thermodynamics I PR: MATH 222, PHYS 213	<b>BAE 331 (1)</b> Professional Practice for Biological Systems Engineering Design	<b>BAE 536 (3)</b> Biological Systems Engineering Senior Design I PR: BAE 331, PR/CO: ME 533 or BAE 545 or BAE 560	<b>BAE 636 (1)</b> Biological Systems Engineering Senior Design II PR: BAE 536
<b>CHM 210 (4)</b> Chemistry I	<b>*CHM 230 (4)</b> Chemistry II PR: CHM 210	<b>*PHYS 213 (5)</b> Engineering Physics I KSC-4 PR: MATH 220	<b>PHYS 214 (5)</b> Engineering Physics II PR: PHYS 213 PR/CO: MATH 221	<b>ME 512 (3)</b> Dynamics PR: CE 333 PR/CO: MATH 340	<b>BAE 345 (2)</b> Properties of Biological Materials PR: CHM 210 or CHM 220	<b>BAE 545 (3)</b> Biological Process Engineering PR/CO: CHE 530 or ME 571	<b>BAE 640 (3)</b> Instrumentation and Control for Biological Systems PR: ECE 410 or ECE 519, MATH 340
<b>DEN 160 (1)</b> College of Engineering Orientation	<b>BIOL 198 (4)</b> Principles of Biology	<b>BAE 350 (2)</b> Off Road Machinery Systems PR: CHM 210	<b>CE 333 (3)</b> Statics PR: MATH 221, PHYS 213	<b>CE 533 (3)</b> Mechanics of Materials PR: CE 333 or 530 ≥ C	<b>ECE 519 (3)</b> Electric Circuits for Engineers PR: PHYS 214	<b>BAE 445 (3)</b> Biological Engineering Fundamentals PR: BIOL 198 and BAE 345 or CE 533 or CHE 354, 355	<b>▲ Elective (3)</b> Track
<b>DEN 161 (1)</b> Engineering Problem Solving PR/CO: MATH 150	<b>*ENGL 100 (3)</b> Expository Writing I KSC-1	<b>BAE 351 (1)</b> Machinery Systems Lab CO: BAE 350	<b>BAE 450 (3)</b> Off Road Machine Power Components PR: PHYS 213	<b>BAE 460 (3)</b> Computational & Statistical Tools for Engineers PR: MATH 221 and 50 standing	<b>*ENGL 200 (3)</b> Expository Writing II KSC-1 PR: ENGL 100	<b>AGRON 205 (3)</b> Soils PR: CHM 110 or 210	<b>* Elective (3)</b> Social and Behavioral Sciences KSC-5
<b>*COMM 106 (3)</b> Public Speaking KSC-2	<b>ME 212 (2)</b> Engineering Graphics PR/CO: MATH 205 or 220	<b>*Elective (3)</b> Arts and Humanities KSC-6	<b>IMSE 530 (2)</b> Engineering Economic Analysis PR: MATH 220	<b>BAE 550 (3)</b> Hydraulics and Mechatronics PR: PHYS 213	<b>ME 533 (3)</b> Machine Design I PR: CE 533, ME 212, 512	<b>* Elective (3)</b> Institutional KSC-7	<b>* Elective (3)</b> Arts and Humanities KSC-6
<b>*Elective (3)</b> Social and Behavioral Sciences KSC-5					<b>ME 571 (3)</b> Fluid Mechanics PR: ME 512 or CE 530 and MATH 222 PR/CO: ME 513 or ME 310		<b>* Elective (3)</b> Institutional 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)	(17 credit hours)	(15 credit hours)	(17 credit hours)	(15 credit hours)	(15 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.*