# Biological Systems Engineering

**YEAR 1**

<table>
<thead>
<tr>
<th>FALL</th>
<th>SPRING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MATH 220</strong> (4)</td>
<td><strong>MATH 221</strong> (4)</td>
</tr>
<tr>
<td>Analytic Geometry and Calculus I</td>
<td>Analytic Geometry and Calculus II</td>
</tr>
<tr>
<td>KSC-3</td>
<td>PR: MATH 220 ≥ C</td>
</tr>
<tr>
<td><strong>CHM 210</strong> (4)</td>
<td><strong>CHM 230</strong> (4)</td>
</tr>
<tr>
<td>Chemistry I</td>
<td>Chemistry II</td>
</tr>
<tr>
<td>PR: CHM 210</td>
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<tr>
<td><strong>DEN 160</strong> (1)</td>
<td><strong>ENGL 100</strong> (3)</td>
</tr>
<tr>
<td>College of Engineering Orientation</td>
<td>Expository Writing I</td>
</tr>
<tr>
<td>PR:CD: MATH 150</td>
<td>KSC-1</td>
</tr>
<tr>
<td><strong>COMM 106</strong> (3)</td>
<td><strong>Elective</strong> (3)</td>
</tr>
<tr>
<td>Public Speaking</td>
<td>Social and Behavioral Sciences</td>
</tr>
<tr>
<td>KSC-2</td>
<td>KSC-5</td>
</tr>
<tr>
<td><strong>BAE 020</strong> (0)</td>
<td><strong>BAE 020</strong> (0)</td>
</tr>
<tr>
<td>(16 credit hours)</td>
<td>(15 credit hours)</td>
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**YEAR 2**

<table>
<thead>
<tr>
<th>FALL</th>
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<tbody>
<tr>
<td><strong>MATH 222</strong> (4)</td>
<td><strong>MATH 340</strong> (4)</td>
</tr>
<tr>
<td>Analytic Geometry and Calculus III</td>
<td>Elementary Differential Equations</td>
</tr>
<tr>
<td>PR: MATH 221 ≥ C</td>
<td>PR: MATH 221 ≥ C</td>
</tr>
<tr>
<td><strong>PHYS 213</strong> (5)</td>
<td><strong>PHYS 214</strong> (5)</td>
</tr>
<tr>
<td>Engineering Physics</td>
<td>Engineering Physics II</td>
</tr>
<tr>
<td>KSC-4</td>
<td>PR: PHYS 213</td>
</tr>
<tr>
<td><strong>BAE 460</strong> (3)</td>
<td><strong>BAE 345</strong> (2)</td>
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<tr>
<td>Computational and Statistical Tools for Engineers</td>
<td>Properties of Biological Materials</td>
</tr>
<tr>
<td>PR: MATH 221</td>
<td>PR: PHYS 213</td>
</tr>
<tr>
<td><strong>IMSE 530</strong> (2)</td>
<td><strong>ENGL 200</strong> (3)</td>
</tr>
<tr>
<td>Engineering Economic Analysis</td>
<td>Expository Writing II</td>
</tr>
<tr>
<td>PR: MATH 220</td>
<td>KSC-1</td>
</tr>
<tr>
<td><strong>Elective</strong> (3)</td>
<td><strong>Elective</strong> (3)</td>
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<td>(15 credit hours)</td>
<td>(16 credit hours)</td>
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**YEAR 3**

<table>
<thead>
<tr>
<th>FALL</th>
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</thead>
<tbody>
<tr>
<td><strong>ME 513</strong> (3)</td>
<td><strong>ME 571</strong> (3)</td>
</tr>
<tr>
<td>Thermodynamics I</td>
<td>Fluid Mechanics</td>
</tr>
<tr>
<td>PR: MATH 222, PHYS 213</td>
<td>PR: ME 512 or ME 530</td>
</tr>
<tr>
<td><strong>BAE 445</strong> (3)</td>
<td><strong>BAE 331</strong> (1)</td>
</tr>
<tr>
<td>Biological Engineering Fundamentals</td>
<td>Professional Practice for Biological Systems Engineering Design</td>
</tr>
<tr>
<td>PR: BOL 198, BAE 345 or CE 533-54- CHE 354,355</td>
<td>PR: CD: CHE 530 or ME 571</td>
</tr>
<tr>
<td><strong>ECE 519</strong> (3)</td>
<td><strong>DE 513</strong> (3)</td>
</tr>
<tr>
<td>Electric Circuits for Engineers</td>
<td>Technical</td>
</tr>
<tr>
<td>PR: PHYS 214</td>
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</tr>
<tr>
<td><strong>Elective</strong> (3)</td>
<td><strong>Elective</strong> (3)</td>
</tr>
<tr>
<td>(15 credit hours)</td>
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<tbody>
<tr>
<td><strong>BAE 536</strong> (3)</td>
<td><strong>BAE 636</strong> (1)</td>
</tr>
<tr>
<td>Biological Systems Engineering Senior Design I</td>
<td>Biological Systems Engineering Senior Design II</td>
</tr>
<tr>
<td>PR: BAE 531, PR:CD: ME 532 or BAE 545 or BAE 560</td>
<td>PR: BAE 536</td>
</tr>
<tr>
<td><strong>BAE 545</strong> (3)</td>
<td><strong>BAE 640</strong> (3)</td>
</tr>
<tr>
<td>Biological Process Engineering</td>
<td>Instrumentation and Control for Biological Systems</td>
</tr>
<tr>
<td>PR:CD: CHE 530 or ME 571</td>
<td>PR: ECE 410 or ECE 519, MATH 340</td>
</tr>
<tr>
<td><strong>BAE 536</strong> (3)</td>
<td><strong>BAE 640</strong> (3)</td>
</tr>
<tr>
<td>Biological Systems Engineering Senior Design I</td>
<td>Biological Systems Engineering Senior Design II</td>
</tr>
<tr>
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<td>PR: BAE 536</td>
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<tr>
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<td><strong>BAE 640</strong> (3)</td>
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<tr>
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<td>PR: BAE 536</td>
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**Key**

- **=** Prerequisite for another course
- **PR** = Prerequisite requirement
- **PR/CO** = Prerequisite or concurrent requirement
- **KSC** = 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.
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.

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.