BIOSYSTEMS ENGINEERING
BIOPROCESSING AND FOOD PROCESSING OPTION

Course Plan
2025-2026
122 Hours

Year 1

16 Credit Hours

BAE 1011
Intro to Biosystems
1 Hour
Note 1

UNIV 1111
First Yr. Seminar
1 Hour

MATH 2144
Calculus 1
4 Hours
Note 2
Prerequisites: C or better in one of the following- MATH 1613 MATH 1715 MATH 1813
→ MATH 2153, PHYS 2014, BAE 3033, ENSC 2113, ENSC 2213

CHEM 1414
Gen Chemistry
4 Hours
→ ENSC 2213

ENGL 1113
Engl Comp 1
3 Hours
Note 3
→ ENGL 1213

HIST 1103
American Hist
3 Hours
Note 4

14 Credit Hours

BAE 1022
Exper Methods
2 Hours
Note 1

PHYS 2014
Univ. Physics I
4 Hours
MATH 2144
→ BAE 3033, ENSC 2213, ENSC 2113

MATH 2153
Calculus II
3 Hours
MATH 2144
→ MATH 2163, MATH 2233, IEM 3503, ENSC 3233, ENSC 2613

ENGR 1322 or ENGR 1332
Engr Design
2 Hours

ENGL 1213
Engl Comp II
3 Hours
Note 3
ENGL 1113

Year 2

17 Credit Hours

BAE 2013
Comp Methods
3 Hours
Note 1

ENSC 2113
Statics
3 Hours
MATH 2144, PHYS 2014
→ ENSC 2143, ENSC 3233

MATH 2163
Calculus III
3 Hours
MATH 2153
→ STAT 4033 or STAT 4073

ENSC 2213
Thermodynamics
3 Hours
MATH 2144, PHYS 2014, CHEM 1414
→ BAE 3213, BAE 4413

ENSC 3431
Thermo &Heat Transfer
1 Hour
Concurrent Enrollment in ENSC 2213

BIOL 1113 & BIOL 1111 or BIOL 1114
4 Hours
→ BAE 3033, MICR 2123

16 Credit Hours

BAE 3033
Biomaterials
3 Hours
BIOL 1113 & BIOL 1111 or BIOL 1114, MATH 2144, PHYS 2014

ENSC 2143
Strength of Mat'l
3 Hours
ENSC 2113
→ BAE 4012

MATH 2233
Diff Equations
3 Hours
MATH 2153
→ BAE 3013, BAE 3023

ENSC 3233
Fluid Mech
3 Hours
MATH 2153, ENSC 2113
→ BAE 3013, BAE 3213, BAE 4283, BAE 4413

ENSC 3231
Fluids and Hydraulics
1 Hour
Concurrent Enrollment in ENSC 3233

POLS 1113
American Gov't
3 Hours

Other Requirements:
- A minimum 2.0 Technical GPA. The Technical GPA is calculated from all BAE prefixes or substitutions to BAE courses.
- Students are required to complete the Fundamentals of Engineering (FE) exam prior to graduation.
- A minimum of 40 semester credit hours and 100 grade points must be earned in courses numbered 3000 or above.
- A 2.00 GPA or higher in upper-division hours.

Patterned = General Education Course

Shaded = Course requires a grade of C or above

Prerequisites → **Course No.** Course Name, # of Hours, See Note # → Subsequent Courses

NOTES: (F)-offered in Fall, (SP)-offered in Spring

1) BAE 1011, BAE 1022 and BAE 2013 can often be substituted for students transferring into the department internally or externally from another institution. Please contact the department for more information.
2) The prerequisite for MATH 2144 is to score a minimum of 75 on the Math Placement Test or by earning a minimum grade of "C" in MATH 1813 or MATH 1715 or MATH 1613.
3) See Academic Regulation 3.5 (http://catalog.okstate.edu/university-academic-regulations/ #english-composition).
4) HIST 1103 can be replaced with HIST 1483 (H) or HIST 1493 (DH).
5) Any upper division engineering, BAE, AST and/or science elective is to be selected from an approved list and approved by an advisor.
6) Additional general education credit hours are required to meet the total 40-hour minimum of general education credit. Students must take 3 hours of credit in courses designated "G," 3 hours of credit in courses designated "S," 3 hours of credit in courses designated "D," and 6 hours of credit in courses designated "H." Additionally, students must take a course designated "Q," "H," "N," "S," "D," "G," or "F." There will be courses that can be paired, for example (DH) courses, that can be used to meet multiple general education designation hour requirements.
7) Select one of the following labs: ENSC 2141 (F,SP), ENSC 2411 (F,SP), ENSC 2611 (F,SP), ENSC 3311 (F,SP), ENGR 2421 (F,SP)
8) BAE 4001 and BAE 4012 are to be taken concurrently.

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Course Plan
2025-2026
122 Hours

Year 3

16 Credit Hours

ENSC 2613 Elec Science — 3 Hours
Prerequisites: MATH 2153
Subsequent Courses: BAE 3023, BAE 3213

ENGR or SCI ELECTIVE — 3 Hours, Note 5

STAT 4033 or STAT 4073 Engr Statistics — 3 Hours
Prerequisites: MATH 2163

Social and Behavioral Sciences Course (S) — 3 Hours, Note 6

IEM 3503 Engr Econ — 3 Hours
Prerequisites: MATH 2153

Select 1 ENSC LAB — 1 Hour, Note 7

14 Credit Hours

BAE 3023 Inst. & Ctrls — 3 Hours
Prerequisites: MATH 2233, ENSC 2613
Subsequent Courses: BAE 4012

BAE 3013 Heat/Mass Trans — 3 Hours
Prerequisites: MATH 2233, ENSC 3233
Subsequent Courses: BAE 4012, BAE 4283, BAE 4413

BAE 3213 Energy & Power — 3 Hours
Prerequisites: ENSC 2213, ENSC 2613, ENSC 3233
Subsequent Courses: BAE 4012

ENGR or SCI ELECTIVE — 2 Hours, Note 5

Global Cultural Competency Course (G) — 3 Hours, Note 6

Year 4

14 Credit Hours

BAE 4001 Prof. Practice — 1 Hour, Note 8
Subsequent Courses: BAE 4023

BAE 4012 Sr Design I — 2 Hours, Note 8
Prerequisites: Completion of BAE 3013, BAE 3023, BAE 3223; Completion or Concurrent Enrollment in ENSC 2143, BAE 4001
Subsequent Courses: BAE 4023

BAE 4413 Food Engineering — 3 Hours
Prerequisites: BAE 3013, ENSC 3233, ENSC 2213

MICR 2123 Microbiology — 3 Hours
Prerequisites: CHEM 1414, BIOL 1113 & BIOL 1111 or BIOL 1114

MICR 2132 Microbiology Lab — 2 Hours
Concurrent Enrollment in MICR 2123

Humanities Course (H) — 3 Hours, Note 6

15 Credit Hours

BAE 4023 Sr Design II — 3 Hours
Prerequisites: BAE 4001, BAE 4012

BAE 4283 Bioprocessing — 3 Hours
Prerequisites: BAE 3013, ENSC 3233

ENGR or SCI ELECTIVE — 2 Hours, Note 5

BIOC 2344 Ap. Biomolecules — 4 Hours
Prerequisites: CHEM 1414

Humanities and Diversity Course (DH) — 3 Hours, Note 6

Patterned = General Education Course

Shaded = Course requires a grade of C or above

Course No.
Course Name
# of Hours
See Note #

Prerequisites

Subsequent Courses

Additional State/OSU Requirements:

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2031.