

Biological Systems Engineering

Bioenvironmental Option

2020-2021 Catalog

127 Total Credits

First Year

Semester 1

- R Engr 101 (Engr Orientation)
- 3 ABE 170 (Engr Graphics/Design)
- 4 Chem 167 (Chem for Engrs)
- 1 Chem 167L (Chemistry Lab)
- 4 Math 165 (Calculus I)
- 3 Engl 150 (Critical Thinking & Comm)
- 1 Lib 160 (Library)

16 Total Credits

Semester 2

- 1 ABE 110 (Experiencing BSE)
- 3 ABE 160 (Engr Problem Solving)
- 4 Math 166 (Calculus II)
- 5 Phys 221 (Classical Physics I)
- 3 Engl 250 (WOVE Comp)

16 Total Credits

Sophomore Year

Semester 3

- 3 ABE 216 (Fundamentals of ABE)
- 3 CE 274 (Statics)
- 3 Biol 212 (Principles of Biology II)
- 4 Chemistry Sequence I with Lab
- 3 US Diversity Elective

16 Total Credits

Semester 4

- 2 ABE 218 (Project Mgmt/Design)
- 1 ABE 201 (Prep for the Workplace)
- 1 ABE 273 (CAD for Facilities/Land)
- 3 ME 231 (Thermodynamics)
- 4 Math 267 (Differential Equations)
- 4 Chemistry Sequence II with Lab

15 Total Credits

Junior Year

Semester 5

- 3 ABE 316 (Systems Modeling)
- 3 EM 378 (Mechanics of Fluids)
- 3 Micro 302 (Biology of Microorganisms)
- 1 Micro 302L (Microbiology Lab)
- 3 Stat 305 (Engineering Statistics)
- 3 Communication Elective

16 Total Credits

Semester 6

- 4 ABE 363 (Ag Power/Electronics)
- 3 ABE 380 (Principles of ABE)
- 3 CE 372 (Hydrology/Hydraulics)
- 3 EM 324 (Mechanics of Materials)
- 3 IE 305 (Engineering Economics)

16 Total Credits

Senior Year

Semester 7

- 2 ABE 415 (ABE Design I)
- 3 ABE 404 (Instrumentation)
- 3 ABE 480 (Engr Analysis of Bio Systems)
- 3 ABE 431 (Soil/Water Conservation Systems)
- 3 International Perspective Elective
- 3 SSH Elective

17 Total Credits

Semester 8

- 2 ABE 416 (ABE Design II)
- 3 ABE 451 (Food/Bioprocess Engr)
- 3 CE 326 (Environmental Engr)
- 1 EM 327 (Mech of Materials Lab)
- 3 Bioenvironmental Elective
- 3 SSH Elective

15 Total Credits

Shading indicates Basic Program courses

Biological Systems Engineering

Food Option
2020-2021 Catalog
128 Total Credits

First Year

Semester 1

- R Engr 101 (Engr Orientation)
- 3 ABE 170 (Engr Graphics/Design)
- 4 Chem 167 (Chem for Engrs)
- 1 Chem 167L (Chemistry Lab)
- 4 Math 165 (Calculus I)
- 3 Engl 150 (Critical Thinking & Comm)
- 1 Lib 160 (Library)

16 Total Credits

Semester 2

- 1 ABE 110 (Experiencing BSE)
- 3 ABE 160 (Engr Problem Solving)
- 4 Math 166 (Calculus II)
- 5 Phys 221 (Classical Physics I)
- 3 Engl 250 (WOVE Comp)

16 Total Credits

Sophomore Year

Semester 3

- 3 ABE 216 (Fundamentals of ABE)
- 3 CE 274 (Statics)
- 3 Biol 212 (Principles of Biology II)
- 4 Chemistry Sequence I with Lab
- 3 US Diversity Elective

16 Total Credits

Semester 4

- 2 ABE 218 (Project Mgmt/Design)
- 1 ABE 201 (Prep for the Workplace)
- 1 ABE 273 (CAD for Facilities/Land)
- 3 ME 231 (Thermodynamics)
- 4 Math 267 (Differential Equations)
- 4 Chemistry Sequence II with Lab

15 Total Credits

Junior Year

Semester 5

- 3 ABE 316 (Systems Modeling)
- 3 EM 378 (Mechanics of Fluids)
- 3 Micro 302 (Biol of Microorganisms)
- 1 Micro 302L (Microbiology Lab)
- 3 Stat 305 (Engineering Statistics)
- 3 Communication Elective

16 Total Credits

Semester 6

- 4 ABE 363 (Ag Power/Electronics)
- 3 ABE 380 (Principles of BSE)
- 3 ABE 469 (Grain Processing/Handling)
- 3 EM 324 (Mechanics of Materials)
- 3 IE 305 (Engineering Economics)

16 Total Credits

Senior Year

Semester 7

- 2 ABE 415 (ABE Design I)
- 3 ABE 404 (Instrumentation)
- 3 ABE 480 (Analysis Biol Systems Engr)
- 3 FS HN 420 (Food Microbiology)
- 3 Food Elective
- 3 International Perspective Elective

17 Total Credits

Semester 8

- 2 ABE 416 (ABE Design II)
- 3 ABE 451 (Food/Bioprocess Engr)
- 1 EM 327 (Mechanics of Materials Lab)
- 4 ME 436 (Heat Transfer)
- 3 SSH Elective
- 3 SSH Elective

16 Total Credits

Shading indicates Basic Program courses

Compiled from official ISU catalog 4-year plans (catalog.iastate.edu/undergraduatemajors-alpha/)

Biological Systems Engineering

Biorenewable Resources Option

2020-2021 Catalog

128 Total Credits

First Year

Semester 1

- R Engr 101 (Engr Orientation)
- 3 ABE 170 (Engr Graphics/Design)
- 4 Chem 167 (Chem for Engrs)
- 1 Chem 167L (Chemistry Lab)
- 4 Math 165 (Calculus I)
- 3 Engl 150 (Critical Thinking & Comm)
- 1 Lib 160 (Library)

16 Total Credits

Semester 2

- 1 ABE 110 (Experiencing BSE)
- 3 ABE 160 (Engr Problem Solving)
- 4 Math 166 (Calculus II)
- 5 Phys 221 (Classical Physics I)
- 3 Engl 250 (WOVE Comp)

16 Total Credits

Sophomore Year

Semester 3

- 3 ABE 216 (Fundamentals of BSE)
- 3 CE 274 (Statics)
- 3 Biol 212 (Principles of Biology II)
- 4 Chemistry Sequence I with Lab
- 3 US Diversity Elective

16 Total Credits

Semester 4

- 2 ABE 218 (Project Mgmt/Design)
- 1 ABE 201 (Prep for the Workplace)
- 1 ABE 273 (CAD for Facilities/Land)
- 3 ME 231 (Thermodynamics)
- 4 Math 267 (Differential Equations)
- 4 Chemistry Sequence II with Lab

15 Total Credits

Junior Year

Semester 5

- 3 ABE 316 (Systems Modeling)
- 3 ABE 325 (Biorenewable Systems)
- 3 EM 378 (Mechanics of Fluids)
- 3 Micro 302 (Biol of Microorganisms)
- 1 Micro 302L (Microbiology Lab)
- 3 Stat 305 (Engineering Statistics)

16 Total Credits

Semester 6

- 4 ABE 363 (Ag Power/Electronics)
- 3 ABE 380 (Principles of BSE)
- 3 EM 324 (Mechanics of Materials)
- 3 IE 305 (Engineering Economics)
- 3 Communication Elective

16 Total Credits

Senior Year

Semester 7

- 2 ABE 415 (ABE Design I)
- 3 ABE 404 (Instrumentation)
- 3 ABE 480 (Engr Analysis of Bio Systems)
- 3 Biorenewable Elective
- 3 International Perspective Elective
- 3 SSH Elective

17 Total Credits

Semester 8

- 2 ABE 416 (ABE Design II)
- 3 ABE 451 (Food/Bioprocess Engr)
- 3 ABE 469 (Grain Processing/Handling)
- 1 EM 327 (Mechanics of Materials Lab)
- 4 ME 436 (Heat Transfer)
- 3 SSH Elective

16 Total Credits

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Biological Systems Engineering

Open Option
2020-2021 Catalog
128 Total Credits

First Year

Semester 1

- R Engr 101 (Engr Orientation)
- 3 ABE 170 (Engr Graphics/Design)
- 4 Chem 167 (Chem for Engrs)
- 1 Chem 167 (Chemistry Lab)
- 4 Math 165 (Calculus I)
- 3 Engl 150 (Critical Thinking & Comm)
- 1 Lib 160 (Library)

16 Total Credits

Semester 2

- 1 ABE 110 (Experiencing BSE)
- 3 ABE 160 (Engr Problem Solving)
- 4 Math 166 (Calculus II)
- 5 Phys 221 (Classical Physics I)
- 3 Engl 250 (WOVE Comp)

16 Total Credits

Sophomore Year

Semester 3

- 3 ABE 216 (Fundamentals of ABE)
- 3 CE 274 (Statics)
- 3 Biol 212 (Principles of Biology II)
- 4 Chemistry Sequence I with Lab
- 3 US Diversity Elective

16 Total Credits

Semester 4

- 2 ABE 218 (Project Mgmt/Design)
- 1 ABE 201 (Prep for the Workplace)
- 1 ABE 273 (CAD for Facilities/Land)
- 3 ME 231 (Thermodynamics)
- 4 Math 267 (Differential Equations)
- 4 Chemistry Sequence II with Lab

15 Total Credits

Junior Year

Semester 5

- 3 ABE 316 (Systems Modeling)
- 3 EM 378 (Mechanics of Fluids)
- 3 Micro 302 (Biology of Microorganisms)
- 1 Micro 302L (Microbiology Lab)
- 3 Stat 305 (Engineering Statistics)
- 3 Communication Elective

16 Total Credits

Semester 6

- 4 ABE 363 (Ag Power/Electronics)
- 3 ABE 380 (Principles of BSE)
- 3 EM 324 (Mechanics of Materials)
- 3 IE 305 (Engineering Economics)
- 3 Sequence I Elective

16 Total Credits

Senior Year

Semester 7

- 2 ABE 415 (ABE Design I)
- 3 ABE 404 (Instrumentation)
- 3 ABE 480 (Engr Analysis of Bio Systems)
- 3 Sequence II Elective
- 3 International Perspective Elective
- 3 SSH Elective

17 Total Credits

Semester 8

- 2 ABE 416 (ABE Design II)
- 3 ABE 451 (Food/Bioprocess Engr)
- 1 EM 327 (Mechanics of Materials Lab)
- 4 ME 436 (Heat Transfer)
- 3 Sequence III Elective
- 3 SSH Elective

16 Total Credits

Shading indicates Basic Program courses

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