**Suggested Course Sequencing**

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sophomore Year</th>
<th>Junior Year</th>
<th>Senior Year</th>
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<tbody>
<tr>
<td><strong>AUTUMN</strong></td>
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<tr>
<td>CHEM 142 General Chemistry I (5 cr)</td>
<td>CHEM 237 Organic Chemistry I (4 cr)</td>
<td>BSE 391* Eng Princip. Biorefineries (5 cr)</td>
<td>BSE 422* Bioresource Sci/Eng 3 (4 cr)</td>
</tr>
<tr>
<td>MATH 124 Calculus I (5 cr)</td>
<td>PHYS 121 Mechanics (5 cr)</td>
<td>BSE 406* Natural Products Chem (5 cr)</td>
<td>BSE 430* Paper. Process+ (5 cr)</td>
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<tr>
<td>GEN ST 199 or Elective (1-2 cr)</td>
<td>MATH 307 Differential Equations (3 cr)</td>
<td>Engineering Topics (6 cr)</td>
<td>BSE 497* Internship (1 cr)</td>
</tr>
<tr>
<td>BSE 150 Intro to Bioresources (1 cr)</td>
<td>Or AMATH 351 Diff Equations (3 cr)</td>
<td>Any I&amp;S credit (5 cr)</td>
<td>Any I&amp;S credit (5 cr)</td>
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<th><strong>WINTER</strong></th>
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<tbody>
<tr>
<td>CHEM 152 General Chemistry II (5 cr)</td>
<td>CHEM 238 Organic Chemistry II (4 cr)</td>
<td>BSE 392* Bioresource Transport (5 cr)</td>
<td>BSE 426* Bioresource Lab (4 cr)</td>
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<tr>
<td>MATH 125 Calculus II (5 cr)</td>
<td>PHYS 122 Electromag-Oscill (5 cr)</td>
<td>BSE 420* Bioresource Sci/Eng 4 (4 cr)</td>
<td>BSE 421* Biore. Sci/Eng 2 (4 cr)</td>
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<tr>
<td>BSE 201* Pulp, Paper and Bioproducts (3 cr)</td>
<td>MATH 308 Linear Algebra (5 cr)</td>
<td>Engineering Topics (3 cr)</td>
<td>Engineering Topics (6 cr)</td>
</tr>
<tr>
<td>BSE 202 Pulp &amp; Paper Field (1 cr)</td>
<td>Or AMATH 352 Linear Algebra (3 cr)</td>
<td>ECON 200 Microeconomics (5 cr)</td>
<td>ECON 436* Papermaking Lab II (4 cr)</td>
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<th><strong>SPRING</strong></th>
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<tr>
<td>CHEM 162 General Chem. III (5 cr)</td>
<td>BSE 231 Tech Writing (5 cr)</td>
<td>BSE 481* Biore. Design II (5 cr)</td>
<td>BSE 480* Bioresource Design (4 cr)</td>
</tr>
<tr>
<td>MATH 126 Calculus III (5 cr)</td>
<td>PHYS 123 Waves (5 cr)</td>
<td>Any VLPA (5 cr)</td>
<td>Any VLPA (5 cr)</td>
</tr>
<tr>
<td>ENGL 131 Composition (5 cr)</td>
<td>A A 260 Thermody (4 cr)</td>
<td>DIV credit (3 cr)</td>
<td>DIV credit (3 cr)</td>
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</tbody>
</table>

~ 180 credits required for degree ~

**ENGINEERING TOPICS & BUSINESS OPTION ELECTIVES**

(15 credits minimum):

- Engineering Topics (min 15 crs): CSE 142*, 143; CHEM E 326*, 341, 355, 375, 436*, 455, 480, 481; MSE 170, 310, 362, 463, 471, 475; CEE 220, 354, 357, 480, 482, 485, 486, 487, 488, 490, 493, 494; A A 210; E E 215; IND E 337; M E 230
- Recommended for CHEM E double degree applicants
- Business Option (must be declared, will appear on transcript, additional credits required (12 crs): ESRM 320 (5) (required), ESRM 321 (5) (required); Choose one: I BUS 300 (5), MKTG 301 (4), MKTG 335 (4), MKTG 450 (4), ESRM 400 (3), MGMT 300 (4), MGMT 401 (4), MGMT 403 (4), ACCTG 215 (5), ACCTG 225 (5), CFR 519 (5), OPMGT 301 (4).

**Academic Progress Policy**

All BSE students are expected to maintain satisfactory progress with the department and the University.

http://www.sefs.washington.edu/academicPrograms/undergrad/bse/BSEAcademicProgressPolicy.pdf

**Contact Chemical Engineering advising if you plan to apply for admission for a double degree:** chemeadv@uw.edu

http://www.cheme.washington.edu/undergraduate_students/admission

**ADDITIONAL COLLEGE OF THE ENVIRONMENT REQUIREMENTS:**

1. 10 cr I&S outside of BSE and major
2. 10 cr NW outside of BSE and major

**General Electives** may be used to fulfill these requirements. Remaining requirements are met within the major.

**Notes:** +Requires 2.0 minimum grade. *STAT 390* or IND E 315*
Bioresource Science and Engineering Major Information

**Accreditation**

The BSE program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org. The Bioresource Science and Engineering Program is an engineering major based in the School of Environmental and Forest Sciences in the College of the Environment.

**Program Focus**

The BSE program focuses on the development of process engineers who optimize the manufacture of value added products from sustainable natural resources. Students learn the fundamentals of science and engineering related to the conversion of biomass to fuels, chemicals, and pulp and paper products. The BSE program has a strong research component.

BSE graduates begin careers in manufacturing, engineering, technical service and management training. Positions include process engineer, technical sales engineer, product development engineer, environmental engineer or scientist and research engineer as well as many other specialties that require a fundamental chemical engineering background.

**Sample Areas of Research**

High-speed chemical analysis of biomass

Use of natural non-wood products to make paper and other bio-products

Bioconversion of lignocellulosic biomass to ethanol

Biofuel and bioenergy options from wood

Surface and colloid science in bioprocessing

Fiber composites

Sensor development for biorefineries

Fiber production from agriculture residues

Bioconversion of biomass to fuels and chemicals

Life cycle assessment of biofuel systems

Thermal conversion of biomass to fuels and chemicals

Supercritical processes in biorefineries

Production of unique nano-carbon structures from biomass

**Additional Areas of Study:** Students with an interest in chemical engineering may apply for admission to CHEM E during their BSE sophomore year. Contact the CHEM E department for advising in advance of application and notify the BSE advisers of the intent to pursue a double degree.

**Admission:**

BSE is a capacity-constrained major. Applications for incoming freshmen are due November 15th. Current UW and transfer students apply through the College of Engineering online application.

**Prospective UW students:**

www.washington.edu/admissions

**Program/study options:**

Research, internships, honors, scholarships, and graduate study for qualified applicants.

**Career/job information:**

BSE students are supported by the Washington Pulp and Paper Foundation (https://depts.washington.edu/wppf) for scholarships, internships and a path to full time employment.