

BIORESOURCE SCIENCE AND ENGINEERING



SUGGESTED COURSE SEQUENCING

Freshman Year

AUTUMN

CHEM 142 General Chemistry I^(5 cr)
MATH 124 Calculus I^(5 cr)
GEN ST 199 or Elective^(1-2 cr)
BSE 150 Intro to Bioresources^(1 cr)

WINTER

CHEM 152 General Chemistry II^(5 cr)
MATH 125 Calculus II^(5 cr)
ENGL 131 Composition^(5 cr)

SPRING

CHEM 162 General Chem. III^(5 cr)
MATH 126 Calculus III^(5 cr)
Any DTC Course^(1-5 cr)

Sophomore Year

AUTUMN

CHEM 237 Organic Chemistry I^(4 cr)
PHYS 121 Mechanics^(5 cr)
*MATH 307 Differential Equations^(3 cr)
BSE 201⁺ Pulp, Paper and Bioproducts^(3 cr)
BSE 202 Pulp & Paper Field^(1 cr)

WINTER

CHEM 238 Organic Chemistry II^(4 cr)
PHYS 122 Electromag-Oscill^(5 cr)
**MATH 308 Linear Algebra^(3 cr)
BSE 231 Tech Writing^(3 cr)

SPRING

BSE 248⁺ Paper Structure/prop^(4 cr)
PHYS 123 Waves^(5 cr)
A A 260 Thermodyn^(4 cr)

Junior Year

AUTUMN

BSE 391⁺ Eng Princip. Biorefineries^(5 cr)
BSE 406⁺ Natural Products Chem^(5 cr)
Engineering Topics^(3 cr)
Q SCI 381 Statistics^{1(5 cr)}

WINTER

BSE 392⁺ Bioresource Transport^(5 cr)
BSE 420⁺ Bioresource Sci/Eng 1^(4 cr)
Engineering Topics^(3 cr)
ECON 200 Microeconomics^(5 cr)

SPRING

BSE 426⁺ Bioresource Lab^(4 cr)
BSE 421⁺ Biores. Sci/Eng 2^(4 cr)
Engineering Topics^(6 cr)

Senior Year

AUTUMN

BSE 422⁺ Biores. Sci/Eng 3^(4 cr)
BSE 430⁺ Paper. Process^{+(5 cr)}
BSE 497⁺ Internship^(1 cr)
Any I&S credit^(5 cr)

WINTER

BSE 436⁺ Papermaking Lab II^(4 cr)
BSE 480⁺ Bioresource Design^(4 cr)
Any I&S credit^(5 cr)
Any VLPA^(5 cr)

SPRING

BSE 481⁺ Biores. Design II^(5 cr)
Any VLPA^(5 cr)
DIV credit^(3 cr)
Engineering Topics^(3 cr)

~ 180 credits required for degree ~

**ENGINEERING TOPICS
(15 credits minimum):**

Choose from the following list: CSE 142, 143;
CHEM E 326, 341, 355, 375, 436, 455, 480, 481;
MSE 170, 310, 362, 463, 471, 475;
CEE 220, 291, 354, 357, 480, 482, 487, 488, 490, 493, 494;
A A 210; E E 215; IND E 337; M E 230; ENGR 321 (max 6 credits)

**Business Option (must be declared, will appear on
transcript, additional credits required)**

(12 credits minimum):

Choose from the following list: ESRM 400 (3, WIN), ESRM 423 (3, WIN),
ESRM 320 (5, SUM only online), ESRM 321 (5, SUM only online),
ENTRE 443 (2, AUT), ACCTG 215 (5), ACCTG 219 (4), ACCTG 225 (5),
INFO 101 (5), INFO 102 (5)

Academic Progress Policy

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

<https://sefs.uw.edu/wp-content/uploads/sites/22/2019/08/BSE-Academic-Progress-Policy-8-2019.pdf>

+All BSE courses require a 2.0 minimum grade.

*Or AMATH 351 Diff Equations^(3 cr) **Or AMATH 352 Linear Algebra^(3 cr) ¹Or 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.

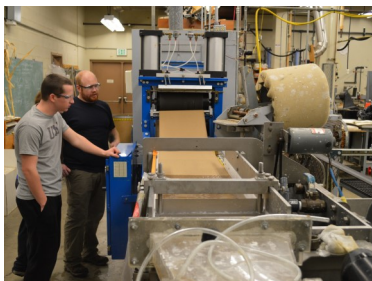
Program Focus

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.



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.



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

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 (depts.washington.edu/wppf) for scholarships, internships and a path to full time employment.



SCHOOL OF ENVIRONMENTAL AND FOREST SCIENCES
UNIVERSITY of WASHINGTON
College of the Environment

Office of Student and Academic Services

Anderson Hall Rooms 116/130

PH: 206-543-3077

Appointments: norduw.youcanbook.me

BLOG: sefs.uw.edu/students/student-blog/

WEB: sefs.uw.edu/students/undergraduate/bse-major/