

SUSTAINABLE SYSTEMS SCIENCE MAJOR

Program Curriculum

Minimum credit hours required for graduation is 120.

Code	Title	Credits
Degree Core Requirements (24 credit hours)		
SBIO 1024	Systems Thinking in a Bioeconomy	3
SBIO 1114	A Sustainable Future through Circular Economy	3
SBIO 2124	Structure and Properties of Sustainable Biomaterials	3
SBIO 3454	Society, Sustainability Biomaterials and Energy	3
SBIO 3524	Manufacture of Sustainable Biomaterials for Structures	3
SBIO 4164	Sustainability Performance and Assessments	3
STAT 3615	Biological Statistics	3
STAT 3616	Biological Statistics	3
Subtotal		24
Major Requirements (31 credit hours)		
ENGR 3124	Introduction to Green Engineering	3
ENGR 4134	Environmental Life Cycle Assessment	3
FREC 2614	Human-Environment Systems	3
MGT 2504	Sustainable Business Management	3
SBIO 3004	Sustainable Nature-Based Enterprises	3
SBIO 3014	Life Cycle Assessment Field Course	1
SBIO 3324	Green Building Systems	3
SBIO 3464	Sustainable Operations Management	3
SBIO 4384	Biorefinery Science	3
SPIA 2004	Introduction to Urban Analytics	3
PPE 2894	PPE Gateway Course	3
Subtotal		31
Restricted Electives (6 credit hours)		
<i>Select two of the following:</i>		6
FREC 2124	Forests, Society & Climate	
FREC/NR 2554	Leadership for Global Sustainability	
FREC 4024	Forest Resources Management and Business	
FREC 4554	Creating the Ecological City	
GEOG 1115	Seeking Sustainability	
GEOG 1116	Seeking Sustainability	
GEOG/SPIA 2244	Sustainable Urbanization	
GEOG/NR 4444	Practicing Sustainability	
MGT 4334	Ethical Leadership and Corporate Social Responsibility	
PPE 3314	Ethical Theory	
PPE 4304	Political Philosophy	
SBIO 2314	Building Information Modeling for Wood-Based Construction	
SBIO 2514	Introduction to Sustainability and Industrial Ecology	

SBIO 2614	Introduction to Forest Products Marketing	
SBIO 3314	Mechanics of Sustainable Biomaterials and Packaging	
SBIO 3554	Sustainable Biomaterials Enterprises	
SBIO 4714	Performance of Sustainable Biomaterials in Buildings	
Subtotal		6
Additional Course Requirements (3 credit hours)		
<i>Select one of the following:</i>		3
SBIO 3445	Entrepreneurial Wood Design and Innovation	
SBIO 3446	Entrepreneurial Wood Design and Innovation	
SBIO 3954	Study Abroad	
SBIO 3964	Field Study	
SBIO 2994	Undergraduate Research	
SBIO 3994	Undergraduate Research	
SBIO 4994	Undergraduate Research	
Subtotal		3
Free Electives		
<i>Select 10 credit hours</i>		10
Subtotal		10
Pathways to General Education (46 credit hours)		
<i>Pathways Concept 1 - Discourse</i>		
ENGL 1105	First-Year Writing (1F)	3
or COMM 1015 Communication Skills		
ENGL 1106	First-Year Writing (1F)	3
or COMM 1016 Communication Skills		
Select 3 credit hours in Pathway 1a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G01A)		3
<i>Pathways Concept 2 - Critical Thinking in the Humanities</i>		
Select 6 credit hours in Pathway 2 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G02)		6
<i>Pathways Concept 3 - Reasoning in the Social Sciences</i>		
ECON 2005	Principles of Economics	3
ECON 2006	Principles of Economics	3
<i>Pathways Concept 4 - Reasoning in the Natural Sciences</i>		
BIOL 1105	Principles of Biology	3
CHEM 1035	General Chemistry	3
CHEM 1045	General Chemistry Laboratory	1
<i>Pathways Concept 5 - Quantitative and Computational Thinking</i>		
MATH 1025	Elementary Calculus (5F)	3
MATH 1026	Elementary Calculus (5F)	3
SBIO 2504	Circular Economy Analytics for Sustainable Systems	3
<i>Pathways Concept 6 - Critique and Practice in Design and the Arts</i>		
Select 3 credit hours in Pathway 6d (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06D) or an Integrated course from the approved list		3
Select 3 credit hours in Pathway 6a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06A) or an Integrated course from the approved list		3
<i>Pathways Concept 7 - Critical Analysis of Identity and Equity in the United States</i>		

Select 3 credit hours in Pathway 7 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G07) that may be double-counted with another core outcome or major requirement 3

Subtotal	46
Total Credits	120

Satisfactory Progress

By the end of the semester in which the student has attempted 60 hours (including transfer, advanced placement, advanced standing, and credit by examination), "satisfactory progress" towards a B.S. degree in the College of Natural Resources and Environment will include the following minimum criteria:

- Having a grade point average of at least 2.0
- Passing at least 24 semester credits that apply to Pathways for General Education
- Passing the required 1000-level courses in Biology, Chemistry, English/Communications, and Math

Graduation Requirements

In-major GPA Computation

Computation of the in-major GPA includes all courses designated SBIO. The acceptable cumulative GPA minimum is 2.0

Sequencing

Prerequisite: Some courses required for this major have prerequisites. Courses should be taken in a sequence that ensures that prerequisite or co-requisite requirements are met. Free elective courses may also have prerequisite requirements. Students should plan ahead and ensure that they have completed prerequisites or are enrolled in co-requisite courses. Please refer to Undergraduate Course Catalog or consult your advisor for information about prerequisite requirements.

Foreign Language Requirement

2 years of one language in high school or an 1105-1106 foreign language (e.g., FR, GR, SPAN) grouping if less than two years of one language in high school.