

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 | |

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| 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

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| 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.