

Crookston Campus

Environmental Sciences B.S.

Math, Science and Technology

Academic Affairs

- Program Type: Baccalaureate
- Requirements for this program are current for Spring 2021
- Required credits to graduate with this degree: 120
- Required credits within the major: 55 to 59
- This program requires summer terms.
- Degree: Bachelor of Science

The BS in environmental sciences is designed to provide students with the scientific background and practical skills needed to successfully address environmental issues and the background required to be successful applicants to graduate programs. Students may choose from advanced courses designed to emphasize studies in biological remediation technologies, water quality, or agriculture while participating in a common core of courses which provide knowledge in the basic principles relevant to all areas.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Admission Requirements

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

General Requirements

All students are required to complete general University and college requirements. For more information, see the [graduation requirements](#).

Program Requirements

Students must complete 40 upper-division credits.

A maximum of two D grades are allowed for courses required in the program, subplan/emphasis, and technology requirements. This includes grades earned at UMC or transferred in from another institution.

Environmental Sciences Core

Take exactly 12 course(s) totaling exactly 29 credit(s) from the following:

- **BIOL 3420** - Ecotoxicology (3.0 cr)
- **COMM 4800** - Crisis Communication (3.0 cr)
- **ENSC 2055** - Hazardous Waste Worker Training (3.0 cr)
- **ENSC 3124** - Environmental Science and Remediation Techniques (3.0 cr)
- **ENSC 3132** - Environmental Factors and Human Health (3.0 cr)
- **ENSC 4022** - Risk Assessment and Environmental Impact Statements (3.0 cr)
- **SUST 4100** - Sustainability Capstone (2.0 cr)
- **NATR 2630** - Introduction to Geographic Information Systems (3.0 cr)
- **WRIT 3303** - Writing in Your Profession (3.0 cr)

BIOL 3899 - Pre-Internship Seminar (0.5 cr)

Take 2 or more credit(s) from the following:

- **BIOL 3900** - Internship (1.0 - 2.0 cr)
- **BIOL 3901** - Post-Internship Seminar (0.5 cr)

Liberal Education

This program requires a minimum of 40 credits of liberal education and completion of the ten goal areas of the Minnesota Transfer Curriculum. The following are specific required liberal education courses.

Take exactly 9 course(s) totaling exactly 29 credit(s) from the following:

- **BIOL 1009** - General Biology [BIOL SCI, PEOPLE/ENV] (4.0 cr)
- **COMP 1011** - Composition I [COMMUNICAT] (3.0 cr)
- **COMP 1013** - Composition II [COMMUNICAT] (3.0 cr)
- **ECON 1010** - Global Trade Economics [GLOB PERSP] (3.0 cr)
- **ECON 2101** - Microeconomics [HI/BEH/SSC] (3.0 cr)

- ENSC 3003 - Sustainable YoU, Sustainable World [GLOB PERSP, PEOPLE/ENV] (3.0 cr)
- MATH 1150 - Introduction to Statistics [MATH THINK] (3.0 cr)
- PHYS 1101 - Introductory College Physics I [PHYS SCI] (4.0 cr)
- COMM 1101 - Public Speaking [COMMUNICAT] (3.0 cr)

Technology

Take exactly 1 course(s) totaling 3 - 4 credit(s) from the following:

- CA 1xxx
- CA 2xxx
- CHEM 3022 - Fate and Analysis of Chemicals (4.0 cr)
- MATH 1150 - Introduction to Statistics [MATH THINK] (3.0 cr)

Program Sub-plans

Students are required to complete one of the following sub-plans.

Science

The BS in environmental science with an emphasis in science trains students with the scientific background to understand the fate of chemicals in a variety of human and non-human environments. This will enable students to have a strong understanding of how chemicals move in the environment, and the impacts they have in the various parts of the environment. This science-based understanding of chemical fate and transport will allow students to inform policymakers as to the effectiveness of various decisions on the protection of the environment.

Science Core

Take exactly 7 course(s) totaling exactly 20 credit(s) from the following:

- AGRO 3030 - Statistical Analyses and Research Techniques in Agriculture and Natural Resources (3.0 cr)
- CHEM 1062 - Chemical Principles II (3.0 cr)
- CHEM 1066 - Chemical Principles II Laboratory (1.0 cr)
- CHEM 2301 - Organic Chemistry I (3.0 cr)
- CHEM 2310 - Organic Chemistry Laboratory I (2.0 cr)
- CHEM 3022 - Fate and Analysis of Chemicals (4.0 cr)
- ENSC 3720 *(Inactive)*(4.0 cr)

Science Electives

Take 10 or more credit(s) from the following:

- AGEC 1005 - World Agricultural Food Systems (3.0 cr)
- AGEC 3430 - Food Marketing Systems (3.0 cr)
- ANSC 3004 - Livestock Facilities and Environmental Systems (3.0 cr)
- ASM 3009 - Surveying (4.0 cr)
- ASM 3360 - Applications in Precision Agriculture (2.0 cr)
- BIOL 2020 - Plant Anatomy and Physiology [BIOL SCI, PEOPLE/ENV] (3.0 cr)
- BIOL 2021 - Plant Diversity, Ecology, and Evolution [BIOL SCI, PEOPLE/ENV] (3.0 cr)
- BIOL 2032 - General Microbiology (4.0 cr)
- BM 3008 - Sustainability and Compliance (3.0 cr)
- CHEM 2302 - Organic Chemistry II (3.0 cr)
- CHEM 2311 - Organic Chemistry Laboratory II (2.0 cr)
- CHEM 3021 - Biochemistry I (3.0 cr)
- HORT 3030 - Landscape Design (4.0 cr)
- HORT 3040 - Landscape Installation and Maintenance (3.0 cr)
- HORT 3090 - Advanced Landscape Design (3.0 cr)
- HUM 3310 - Culture and Technology [HUMANITIES, GLOB PERSP] (3.0 cr)
- MATH 1271 - Calculus I [MATH THINK] (4.0 cr)
- MGMT 3210 - Supervision and Leadership (3.0 cr)
- NATR 3374 - Ecology [BIOL SCI] (4.0 cr)
- NATR 3480 - Ecological Restoration (3.0 cr)
- NATR 3486 - Conservation Biology (3.0 cr)
- NATR 3488 - Invasive Species Ecology and Management (3.0 cr)
- NATR 3580 - Advanced Ecological Restoration (2.0 cr)
- NATR 3635 - Geographic Information Systems Applications (3.0 cr)
- NATR 4699 - Integrated Resource Management (3.0 cr)
- POL 1054 - Comparative Government (3.0 cr)
- SOIL 1293 - Soil Science (3.0 cr)
- SWM 3009 - Hydrology and Water Quality (4.0 cr)
- SWM 3224 - Soil and Water Conservation (4.0 cr)
- SWM 3225 - Watershed Management (3.0 cr)

Liberal Education

Take 3 or more course(s) totaling 8 or more credit(s) from the following:

- CHEM 1061 - Chemical Principles I [PHYS SCI, PEOPLE/ENV] (3.0 cr)
- CHEM 1065 - Chemical Principles I Laboratory [PHYS SCI, PEOPLE/ENV] (1.0 cr)
- GEOL 1001 - Introductory Geology [PHYS SCI, PEOPLE/ENV] (4.0 cr)

Open Electives

Take enough open electives to fulfill the program requirement of 120 credits.

Studies

The BS in environmental science with an emphasis in studies trains students with the general understanding of environmental science with specific applications focusing on how it manifests in our society. These students will be at the core of making environmental policies, city planning, and sustainable development.

Studies Core

Take exactly 2 course(s) totaling exactly 6 credit(s) from the following:

- COMM 4007 - Political Communication (3.0 cr)
- NATR 3344 - Land Use Planning (3.0 cr)

Studies Electives

Take 20 or more credit(s) from the following:

- AGEC 1005 - World Agricultural Food Systems (3.0 cr)
- AGEC 3430 - Food Marketing Systems (3.0 cr)
- ANSC 3004 - Livestock Facilities and Environmental Systems (3.0 cr)
- ASM 3009 - Surveying (4.0 cr)
- ASM 3360 - Applications in Precision Agriculture (2.0 cr)
- BIOL 2020 - Plant Anatomy and Physiology [BIOL SCI, PEOPLE/ENV] (3.0 cr)
- BIOL 2021 - Plant Diversity, Ecology, and Evolution [BIOL SCI, PEOPLE/ENV] (3.0 cr)
- BIOL 2032 - General Microbiology (4.0 cr)
- BM 3008 - Sustainability and Compliance (3.0 cr)
- CHEM 2302 - Organic Chemistry II (3.0 cr)
- CHEM 2311 - Organic Chemistry Laboratory II (2.0 cr)
- CHEM 3021 - Biochemistry I (3.0 cr)
- HORT 3030 - Landscape Design (4.0 cr)
- HORT 3040 - Landscape Installation and Maintenance (3.0 cr)
- HORT 3090 - Advanced Landscape Design (3.0 cr)
- HUM 3310 - Culture and Technology [HUMANITIES, GLOB PERSP] (3.0 cr)
- MATH 1271 - Calculus I [MATH THINK] (4.0 cr)
- MGMT 3210 - Supervision and Leadership (3.0 cr)
- NATR 3374 - Ecology [BIOL SCI] (4.0 cr)
- NATR 3480 - Ecological Restoration (3.0 cr)
- NATR 3486 - Conservation Biology (3.0 cr)
- NATR 3488 - Invasive Species Ecology and Management (3.0 cr)
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- SOIL 1293 - Soil Science (3.0 cr)
- SWM 3009 - Hydrology and Water Quality (4.0 cr)
- SWM 3224 - Soil and Water Conservation (4.0 cr)
- SWM 3225 - Watershed Management (3.0 cr)

Liberal Education

Take exactly 2 course(s) totaling exactly 8 credit(s) from the following:

- CHEM 1001 - Introductory Chemistry [PHYS SCI] (4.0 cr)
- POL 1001 - American Government [ETH/CIV RE] (4.0 cr)

Open Electives

Take enough open electives to fulfill the program requirement of 120 credits.