

Environmental Sciences

College of Science, Engineering & Technology
Department of Biological Sciences
242 Trafton Science Center S • 507-389-2786
Web site: www.mnsu.edu/dept/biology

Program Coordinator: Beth Proctor, Ph.D.
507-389-5697

Environmental science is an applied science designed to study those factors that impact our environment. Major areas of environmental concern include, but are not limited to, water (surface and ground water) quality, air quality, and solid and hazardous waste issues. This program is designed to encourage students to use the resources of all the colleges of Minnesota State University, Mankato. The program is oriented toward developing the individual for leadership positions in industry, government, and public concern groups, as well as providing a foundation for individual community involvement as an informed citizen.

Admission to Major is granted by the department. Minimum university admission requirements are:
- a minimum of 32 earned semester credit hours.
- a minimum cumulative GPA of 2.00 (C).
Contact the department for application procedures.

ENVIRONMENTAL SCIENCE BS

There are two different ways to earn a BS degree in Environmental Sciences.

OPTION I: COMPLETION OF TWO MAJORS

Required General Education (8 credits):

BIOL 105 General Biology I (4)
MATH 112 College Algebra (4)

Required for Major (Core, 28-32 credits):

BIOL 215 General Ecology (4)
BIOL 410 Human Ecology (3)
ENVR 440 Environmental Regulations (3)
ENVR 450 Environmental Pollution and Control (3)
ENVR 460 Analysis of Pollutants (4)
ENVR 498 Internship/Research (1-3)

Choose **one** of the following:

BIOL 217 Plant Science (4)
BIOL 316 Animal Diversity (3)
BIOL 412 Soil Ecology (4)

Plus two 300-400 level courses from **one** of the following emphases in Biology:

Aquatic Ecology, Terrestrial Ecology, Plant Sciences, Toxicology, Microbiology, or Techniques.

Note: Courses in these emphases require BIOL 105 and BIOL 106 as prerequisites.

Required for Major (Elective Option):

Elective Option A (6-8 credits, second major in a science):

- Two 300-400 level courses from one of the following areas: Geography, Political Science, Urban and Regional Studies, Business, or Economics.

- Electives may be taken from the 300-400 level that are compatible with Environmental Sciences Major. A maximum of **15 credits** from one major can be used in the second major.

Elective Option B (8-10 credits, second major in a non-science):

- Complete **one** of the following Chemistry sequences:
CHEM 105 and CHEM 111 OR
CHEM 20 and CHEM 202
- Electives from the 300-400 level that are compatible with Environmental Sciences Major. A maximum of 15 credits from one major can be used in the second major.

Required Minor: None.

OPTION II: COMPLETION OF MAJOR PLUS 2 MINORS

Required for Major (Core, 28-32 credits):

See requirements under Option I.

Required for Major (Chemistry, 8-10 credits):

Choose **one** of the following sets to complete one year of Chemistry:

CHEM 105 and CHEM 111 OR
CHEM 20 and CHEM 202

Required (Two Minors):

Select two minors from the following: Anthropology, Business Administration, Chemistry, Community Health, Computer Science, Economics, Geography, Geology, International Business, Law Enforcement, Mass Communication, Physics, Political Science, Technical Writing, Urban & Regional Studies

ENVIRONMENTAL SCIENCE MINOR

Required for Minor (Core, 21 credits):

BIOL 101 Perspectives in Environmental Science (4)
BIOL 215 General Ecology (4)
ENVR 440 Environmental Regulations (3)
ENVR 450 Environmental Pollution and Control (3)

OPTION A: SCIENCE MAJOR

ENVR 460 Analysis of Pollutants (4)
BIOL 410 Human Ecology (3)

OPTION B: NON-SCIENCE MAJOR

Choose **one** set of CHEMISTRY courses from the following:

CHEM 105 and CHEM 111 OR
CHEM 20 and CHEM 202

POLICIES/INFORMATION

P/N Grading Policy. All courses leading to a major or a minor in environmental sciences must be taken for letter grades.

Refer to the College regarding required advising for students on academic probation.

GPA Policy. A minimum grade of "C" is **required** in all courses applied to the Environmental Sciences BS degree.

Several scholarships in the Department of Biological Sciences are available for entering freshmen and currently enrolled MSU students who meet the requirements. Application deadline is March 1 of each year.

Only three credits can be counted toward major. Experience in applied Environmental Sciences according to a prearranged training program.

F, S

ENVR 499 (1-6) Individual Study

Individual Research Project.

F, S

COURSE DESCRIPTIONS

ENVR 101 (4) Perspectives in Environmental Science

This course is designed to introduce students to the complex field of environmental science. Reading assignments, lectures, discussions and other class assignments will introduce students to the structure and functions of ecosystems, the concept of sustainability, issues in environmental protection with an emphasis on global commons, the interrelationships between environment, culture, government and economics and what individuals or groups can do to influence environmental policy/rules.

F, S *GE-8, 10*

ENVR 440 (3) Environmental Regulations

This is a lecture course introducing students to major federal environmental laws and regulations. Discussions include the cause(s) that prompted the enactment of various environmental legislation as well as intent and implementation of the legislation. Both Federal and State of MN environmental statutes will be discussed.

F

ENVR 450 (3) Environmental Pollution & Control

This is a lecture course that introduces students to sources and controls for pollutants in air, water, and soils including hazardous waste. Chemical and biological mechanisms that are important in nature and used to control/treat various types of pollutants are emphasized.

Pre: 1 year CHEM F

ENVR 460 (4) Analysis of Pollutants

The purpose of this lecture/lab class is to introduce students to standard practices and procedures used in sampling and analysis of environmental matrices and to develop an environmental research project. Standard quality control/quality assurance procedures per EPA are emphasized.

S

ENVR 480 (1-6) Senior Research

Participate in an independent research project with advisory support and with a focus on the student's career objectives.

F, S

ENVR 483 (1-2) Environmental Science Seminar

A seminar course that involves a critical evaluation of an area in Environmental Science. Topics vary from year to year. Students are usually required to make a presentation to the class. ALT

ENVR 491 (1-2) In-Service

F, S

ENVR 498 (1-6) Internship