

Environmental Science courses 2018-2020

BI101 General Biology

Environmental Science elective

4 credits

Exploration of biological phenomena. Topics covered include cellular and molecular levels of organization, genetics and mechanisms of heredity in organic evolution, reproduction and development, as well as introductory concepts of taxonomy and ecology.

BI200 Conservation Biology

Environmental Science elective

4 credits

An interdisciplinary examination of issues related to biological diversity. Topics include population biology, biogeography, environmental ethics and policy, loss and degradation of habitat, ecological restoration, and the design, management, and stewardship of protected areas.

BI203 Wildlife Biology and Management

Wildlife Science elective

4 credits

Introduction to the evolutionary history, anatomy, physiology, behavior, and ecology of wildlife. Identification and conservation issues are addressed and include hands-on experiences with the KBIC Natural Resource Department. Management and assessment tools are emphasized. Prerequisite: BI101, BI200, ES110, or instructor permission.

BI205 Fisheries Biology and Management

Wildlife Science elective

4 credits

Introduction to concepts and methodology used in aquaculture, fisheries science and management. Emphasis on terminology, techniques, and practices related to fisheries science, with particular focus on fisheries of the Great Lakes Region. Skills development pertaining to fisheries research and management dynamics, data collection, management, computation and dissemination will be a major component of this course. Students gain practical experience at the KBIC fish hatchery and in the field. Prerequisite: BI101, BI200, ES110, or instructor permission.

BI206 Principles of Ecology

Program requirement

4 credits

Examination of the interactions that organisms have with one another and their physical environment. Students study classic ecological principles used to understand the behavior, physiology, distribution, and abundance of plants and animals. Prerequisite: BI101, BI200, ES110, or instructor permission.

BI211 Plant Taxonomy

Plant Science elective

4 credits

Survey of vascular flora of the Upper Peninsula of Michigan. Emphasis is on field identification of common species, collection and preparation of herbarium samples, and traditional plant uses.

ES107 Science Issues Today

Environmental Science elective

1 credit

Discussion-focused application of key science concepts related to current issues. Topics vary by semester, and content is appropriate for non-science majors. May be repeated for credit.

ES110 Introduction to Environmental Science

Program requirement

4 credits

An interdisciplinary overview of biological, physical, and social factors involving relationships between humans and the environment. The course includes foundational concepts in ecology, earth sciences, natural resource use and conservation, and consequences of human population growth.

ES121 Dendrology

Plant Science elective

4 credits

An examination of trees, emphasizing identification and classification. Additional topics include tree physiology, growth, reproduction, dispersal, and relationships between trees and their environment. Species of Michigan's Upper Peninsula are the focus and are examined through weekly field excursions.

ES125 Introduction to Water Resources

Environmental Science elective

4 credits

An interdisciplinary examination of issues related to global water resources. The course introduces foundational concepts in surface and groundwater hydrology, water quality and supply, water law, and socio-economic factors associated with water resource management. Case studies examine human impacts on water resources.

ES158 Human Geography

Environmental Social Science elective

4 credits

Examination of world geographic conditions such as climate, landforms, natural resources, and ecology and how they influence human culture and civilization over time. Environmental impacts of societies are a focus, as well as population growth, resource utilization, agriculture, industry, and political and economic systems.

ES204 Forest Ecosystems of the Upper Peninsula

Applied Ecology elective

4 credits

Broad overview of the ecology of local forests. Students examine forest community composition, interactions between plants and other organisms, ecosystem changes across space and time, and forest hydrology and soils. Additional topics include forest management and policy, fire, invasive species, and social values associated with forests. Prerequisite: ES110, ES121, or instructor permission.

ES216 Introduction to Sustainability

Environmental Social Science elective

4 credits

An interdisciplinary examination of how to meet today's societal needs without sacrificing the ability of future generations to meet their needs. Relationships between human and natural systems are the focus, with emphasis on critical current issues such as climate change, impacts to water resources, loss of biodiversity, and energy production and use. Economic, legal, and sociological concepts are examined.

ES217 Environmental Policy
Environmental Social Science elective
4 credits

An overview of environmental policy and the regulatory processes in the United States. Students examine the roles of stakeholders and government regulators in the policy-making process. Case studies are used to examine major environmental issues and policy outcomes, focusing on the concepts of risk, economics, and human values.

ES218 Environmental Justice and Ethics
Humanities elective; Anishinaabe Environmental Studies elective
4 credits

An introduction to environmental justice and ethics as place-specific conflicts, practices, and consequences, with particular focus on indigenous case studies. Using scholarship from geography, anthropology, sociology, and indigenous studies, students critically examine the role of race, gender, colonialism, and other social differences in environmental justice and ethics issues.

ES219 Anishinaabe Environmental Studies
Anishinaabe Environmental Studies elective
4 credits

Exploration of human-environment relationships from an Anishinaabe perspective. Traditional cultural values and worldviews are linked to contemporary Tribal natural resource stewardship objectives. Other foundational topics include sovereignty, treaty rights, and traditional ecological knowledge.

ES235 Introduction to Geographic Information Systems (GIS)
Environmental Science elective
4 credits

Introduction to basic principles of GIS. Provides students with an understanding of its importance for resource management. Students will learn to develop and using ArcView database for environmental applications. Topics include global positioning systems (GPS) and remote sensing. Lab sessions include practical application of GIS course material including field work.

ES242 Wetlands
Applied Ecology elective
4 credits

Examination of the vegetation, hydrology, and soil characteristics of wetland ecosystems. The course emphasizes functions and values of wetlands, classification of various wetland communities, conservation strategies, and laws associated with wetland management. Prerequisite: ES110, ES125, BI200, GS105, or instructor permission.

ES297 Capstone Seminar
Program requirement
3 credits

Culmination of course work in the Environmental Science degree program. The course provides students the opportunity to conduct small-scale individual research projects or expand upon projects conducted during their internship experiences. The course emphasizes application of the scientific method, data analysis techniques, technical and scientific writing, and oral presentation. In addition, students will assess the impact of their educational experiences on their ecological and cultural perspectives, and on the development of their critical thinking skills. Prerequisites: sophomore status; EN202; MA105 or MA201. Pre or co-requisite: ES298.

ES298 Internship

Program requirement

1-4 credits

The internship course requires that a student engage in practical work experience in the Environmental Science field under the supervision of a practicing professional. Students receive one credit for every 80 hours worked in the approved site. This is a Pass/Fail course. This course may be repeated for credit.

GS105 Introduction to Earth Science

Program requirement

4 credits

This course examines the physical geography of the earth and processes related to earth systems. Concepts related to plate tectonics, water resources, and human impacts on the landscape are key themes. Additional topics include geology and geologic time, geomorphology, weathering, soils, and climate.