Environmental Science (ENV SCI)

Courses

ENV SCI 505. Environmental Systems. 4 Credits.
Physical and chemical aspects of natural environmental processes. The movement, transformation, and fate of materials and contaminants.
P: gr st.
Fall Only.

ENV SCI 518. Pollution Control. 3 Credits.
Government regulations, manufacturing processes, waste minimization, pollution prevention methods and pollution control techniques of major industries.
P: gr st.
Fall Only.

ENV SCI 520. The Soil Environment. 4 Credits.
The physical, chemical and biological properties and principals of soils; formation, classification and distribution of major soil orders; function and management of soils in natural, agricultural and urban environments. Includes field and laboratory experiences.
P: gr st.
Fall Only.

ENV SCI 523. Pollution Prevention. 3 Credits.
Emphasizes principles of pollution prevention and environmentally conscious products, processes and manufacturing systems. Also addresses post-use product disposal, life cycle analysis, and pollution prevention economics.
P: gr st.
Spring Odd.

ENV SCI 530. Hydrology. 3 Credits.
Qualitative study of the principal elements of the water cycle, including precipitation, runoff, infiltration, evapotranspiration and ground water; applications to water resource projects such as low flow augmentation, flow reregulation, irrigation, public and industrial water supply and flood control.
P: gr st.
Fall Only.

ENV SCI 535. Water and Waste Water Treatment. 3 Credits.
Water and waste water treatment systems, including both sewage and potable water treatment plants and their associated collection and distribution systems. Study of the unit operations, physical, chemical and biological, used in both systems.
P: gr st.
Spring.

ENV SCI 557. Environmental GIS. 2 Credits.
This is a project based course where students conduct geospatial data manipulation, analysis and management with a suite of GIS software tools and web-based GIS interfaces. Students will learn about a range of applications of remotely sensed and other geospatial data to natural science problems. Through the course project, students will create a functional GIS to study or model an environmental phenomena or problem.
P: Graduate status and previous GIS experience
Fall and Spring.

ENV SCI 563. Plants and Forest Pathology. 3 Credits.
Important diseases of forest, shade and orchard trees and diseases of representative economic plants; fungus deterioration in wood storage, its economic importance and methods of control.
P: gr st.
Fall Only.

ENV SCI 601. Stream Ecology. 4 Credits.
The goal of this course is to develop a profound understanding of the abiotic and biotic processes responsible for shaping the ecosystem in running waters. Focus will be on ecological processes, but nutrient dynamics and fluid mechanics are also important issues as well as the fauna associated to the streambed, mainly macro invertebrates and their ecological role. Theory will be combined with hands on experience providing the student with a tool to manage a stream based on ecological principles.
P: gr st.
Fall Even.

ENV SCI 603. Limnology. 4 Credits.
Limnology is a broad sub-discipline of ecology that is the study of the structural and functional interrelationships of organisms of inland waters as they are affected by their dynamic physical, chemical and biotic environments. In this course, we will examine the dominant organizing principles and the current conceptual advances in the field of limnology focusing on lakes.
P: gr st.
Fall Odd.

ENV SCI 605. Aquatic Ecology. 4 Credits.
An introduction to a diversity of freshwater systems, including streams, wetlands, reservoirs and lakes. The lab involves sampling of lakes and streams in eastern Wisconsin for biological and chemical analysis.
P: gr st.
Fall Only.

ENV SCI 615. Solar and Alternate Energy Systems. 3 Credits.
Study of alternate energy systems which may be the important energy sources in the future, such as solar, wind, biomass, fusion, ocean thermal, fuel cells and magneto hydrodynamics.
P: gr st.
Spring Even.

ENV SCI 621. Soils and Geology of Wisconsin Field Trip. 1-3 Credits.
Intensive three-day field study tour of the properties, origins and uses of major soils and landscapes of Wisconsin, with follow-up discussions. Cost of tour bus, guidebook, meals and lodging borne by student.
P: gr st.
Fall Odd.

ENV SCI 632. Hydrogeology. 3 Credits.
Introduction to the geological and physical principles governing ground water flow. Description of aquifer properties, chemical processes, equation of flow, well hydraulics, and environmental concerns.
P: gr st.
Spring.

ENV SCI 634. Environmental Chemistry. 3 Credits.
Physical, chemical, and biological processes affecting the composition of air and water. Chemical reactions in polluted, and unpolluted environments; dispersal processes and methods of control for various pollutants.
P: gr st.
Fall Only.

ENV SCI 635. Environmental Chemistry Laboratory. 1 Credit.
Basic measurement techniques used by environmental scientists to evaluate air and water quality; field methods, continuous monitoring techniques, and in-laboratory analysis techniques. Experiments demonstrate reaction kinetics, stoichiometry, thermodynamics instrumentation, and wet chemical methods.
P: gr st.
Fall Only.

ENV SCI 654. Remote Sensing and GIS. 4 Credits.
Large area, small scale analysis of earth surface features by satellite imagery and data. Manual and computer-assisted manipulation of multispectral images with respect to vegetation, geology, soils, water resources and land use.
P: gr st.
Spring.

ENV SCI 660. Resource Management Strategy. 3 Credits.
Application of the principles of systems analysis to the sustainable use of material and energy resources. Emphasis on use of analytical tools of economics (e.g. costs-benefit, cost-effectiveness, and risk-benefit analysis) and the process of public policy making and implementation.
P: gr st.
Fall and Spring.

ENV SCI 668. Ecological Applications. 4 Credits.
Application of ecological knowledge to the management of natural and human dominated environments, including consideration of agroecosystems, forest, wetland and riparian ecosystems. Attention given to ecology and management of harvestable species, endangered species, non-indigenous species and indigenous pest species. Introduction to the fields of ecotoxicology, ecological risk assessment and ecological economics as they relate to ecosystem management.
P: gr st.
Fall Only.

ENV SCI 669. Conservation Biology. 4 Credits.
Overview of the major issues and ecological principles underlying the field of conservation of biology, including patterns and measurement of biological diversity from genetic to community scales.
P: gr st.
Spring.

ENV SCI 699. Travel Course. 1-6 Credits.
Travel courses are conducted to various parts of the world and are led by one or more faculty members. May be repeated to different locations.
P: cons of instr & prior trip arr & financial deposit.