

ENVIRONMENTAL STUDIES

ENVS 201. DIMENSIONS OF ENVIRONMENTAL SCIENCE I (3)

The physical nature of ecosystems and the environmental changes resulting from human impact of planet Earth will be explored in this course. An overview of the dynamic interaction with Earth's ecosystems will be emphasized, as well as the conflicts between our resource needs and our planet's ecological balance. This course provides the student with an awareness of the ecological balance in nature and our impact on earth's resources.

ENVS 202. DIMENSIONS OF ENVIRONMENTAL SCIENCE II (3)

This course will explore the cultural dimensions of environmental change. Infrastructural changes such as demographic shifts and changing economic patterns of consumption as well as such topics as environmental justice, social impact strategies, and environmental epidemiology will be explored. This core course will provide a broad overview of people who both contribute to and react to a changing environmental landscape.

ENVS 210. INTRODUCTION TO PARK ADMINISTRATION (3)

An introductory survey of the broad spectrum of the park administration field, including the philosophies of administration; the role of parks in modern society, and their impact upon surrounding areas; and the interrelationship of parks, tourism, natural and historic environments, and leisure time. Current developments in the field will be examined. This course is essential for all students with an interest in state and federal land management agencies.

ENVS 300. INTEGRATED PEST MANAGEMENT AND LAB (4)

Pest management is an important aspect of managing our natural resources, from agriculture to forests to wilderness areas. Some pest reduction tactics, like chemical pesticides, are highly effective in the short term but can cause environmental degradation via water and soil contamination or bioaccumulation. This course first examines the pest concept and major factors causing invertebrate organisms to become pests and then explores a range of tactics that may be integrated to manage pests while minimizing environmental degradation. Strategies include biological control, trap crops, cultural methods, pheromone lures, mating disruption, and chemical pesticides. Laboratory exercises will provide hands-on experience with the management of common invertebrate pests. Prerequisites: ENVS 201, 202, and either BIOL 313 or permission of the instructor.

ENVS 301. WILDLIFE MANAGEMENT (3)

An overview of the history of human's relationship to wild animal life. Examines the principles underlying present scientific management practices; objectives of management of game, non-game, and threatened species; and the roles of individuals and private and governmental organizations related to wild animals. Prerequisite: One year of biology.

ENVS 302. FORESTRY (3)

The historic and present day relationship of humans to plants on wild lands. Examines the scientific principles underlying proper use of forest and range lands; wood, forage, and water production; fire, pests, and forest management; recreation and wild land management; and the roles of individuals and private and governmental organizations related to wild lands. Prerequisite: One year of biology.

ENVS 305. ENVIRONMENTAL LAW AND REGULATION (3)

A survey of the legal basis for environmental actions including federal legislation, the congressional rule-making process, and interpretations by the judicial system. Such areas as wildlife protection, water quality, air quality, environmental impact analysis, and land use management will be discussed. This course will provide the basis for understanding the specific legal issues associated with and management process of natural and cultural resources.

ENVS 306. ENVIRONMENTAL POLICY (4)

This course will examine historical and contemporary governmental actions which shape the

management of material and cultural resources. Changing philosophies, ideologies, budgets, and leaders and their impacts upon both the public and private sector will be discussed. Students in environmental studies require a sound understanding of the nature and dynamics of environmental policy, with this course supporting the core of the environmental studies program.

ENVS 307. INTRODUCTION TO HISTORIC PRESERVATION (3)

This course explores the investigation, recordation, analysis, and protection of cultural resources. Archeological sites, historical parks and places, archival collection, conservation and use of museum collections, architectural resources, and historical engineering works will be discussed in their relationship to protection schemes and environmental impact analysis. This core course will introduce students to the wide diversity of cultural resources relevant to environmental science.

ENVS 308. PHYSICAL RESOURCE MANAGEMENT (3)

An introduction to the physical resources encompassed within environmental studies, including but not restricted to the resources of air, water, energy, minerals, and land use. Impact analysis of resource exploitation will be a major focus, examining how our need for these resources has modified our planet. This course will be critical in developing students' understanding and appreciation of the environmental impact resulting from resource exploitation.

ENVS 309. REGIONAL GEOLOGY AND GEOMORPHOLOGY (3)

Introduction to Appalachian and Atlantic Coastal Plain geology, emphasizing the geologic history of the region, rock formations and their attendant fossil content, regional structural geology, and overall regional geomorphology. This course provides the student the opportunity to become acquainted with the geology, geomorphology, and geologic history of our region. The interplay between geology and the environment is significant and will be a major focus of the course.

ENVS 310. PARK MANAGEMENT (3)

An investigation of the theories, practices, economics, and problems fundamental to the use of land and related resources for park purposes. Also, the organization, administration, and policy of different types of parks will be examined with emphasis upon program development, park management practices, and park operation plans. This course is essential for students interested in careers with state and federal land management agencies.

ENVS 311. RESOURCE MANAGEMENT (3)

This course will focus on specific management techniques related to natural and cultural resource use and protection. Techniques related to ecosystem management including soils, waste, forests, range lands, wildlife, fisheries, coastal zones, air, toxic wastes, energy, and cultural sites will be discussed. A significant field component will be associated with this course, exposing students to real world applications and techniques in the field. This course supports electives in the resource management track.

ENVS 319. LAND USE PLANNING (3)

An introduction to urban and regional planning with a focus on land use practices implemented to protect natural and cultural resources and to create livable communities. The course will include a history of planning during the 20th century as well as current policies and practices used by state and local governments to manage growth and stimulate activities in a resource-sensitive manner. An orientation to planning for students interested in resource management or park administration is provided by this course.

ENVS 320. COMMUNICATION STRATEGIES IN ENVIRONMENTAL STUDIES (3)

An introduction of theories, practices, and history of communication and assessment focused on strategies for building environmental awareness, understanding, and responsible action. This course provides the student opportunities within the classroom and through laboratory and field experiences.

ENVS 321. AMERICAN DECORATIVE ARTS (3)

This course will focus on the theoretical and historical foundations of understanding changes in material culture. Special focus will be on changes in the design, lighting, furnishing, and uses of historic house interiors.

ENVS 322. ENVIRONMENTAL HISTORY (3)

This course examines the development of the environmental field, emphasizing the persons and events that led the environmental movement of today.

ENVS 325. ORAL HISTORY (3)

This course provides an introduction to the theory and methodology of oral history interviewing and ethnography. Students will learn the process of working with informants, recordation of oral history, transcription of interviews, and analysis of documentary material.

ENVS 340. SUSTAINABLE AGRICULTURE AND LAB (4)

Factors such as decreasing soil fertility, soil erosion, pesticide resistance, increasing input costs, ground water contamination, and demand for chemical-free food and livestock have convinced the agriculture community of the need for new approaches to food and fiber production. This course examines basic design principles and examples of environmentally and economically sustainable agriculture systems. The course examines the application of ecological principles to sustainable management practices that biologically improve the fertility, organic matter content, and soil structure while minimizing or even eliminating the need for chemical applications for control of pathogens, insect pests, and weeds. Prerequisites: ENVS 201 and 202.

ENVS 341. SUSTAINABLE ENERGY AND LAB (4)

This course introduces concepts of energy conservation and management and explores different renewable energy sources that are considered environmentally sustainable. Problems associated with nonrenewable energy use will be examined, and the range of sustainable alternatives will be explored. The fundamentals of passive solar collection, photovoltaics, wind, hydro, geothermal, and biomass will be covered. Economic and social implications for adopting each technology also will be considered. Prerequisites: ENVS 201, 202, and either GSCI 103 or PHYS 201 and 201L.

ENVS 342. LIMNOLOGY (4)

This course is a comprehensive introduction to the biological, chemical, and physical conditions affecting life in fresh water, particularly lakes, ponds, and reservoirs. Topics include the linkages between terrestrial and aquatic ecosystems, limnological techniques and equipment, productivity, pollution, fisheries management, and aquaculture. Major biological components such as the benthos, zooplankton, phytoplankton, macroinvertebrates, vertebrates, and aquatic vegetation will be examined.

ENVS 343. AQUATIC ENTOMOLOGY (4)

This course introduces the taxonomy and ecology of the insects most commonly found in freshwater environments. Topics covered include insect diversity, behavioral, morphological, and physiological adaptations to specific habitats, population and community level ecology, and ecological relationships with physical and biotic environments. The laboratory will emphasize methods of sampling for aquatic invertebrates, recognition of all orders and major families of aquatic insects, and use of keys for identification of specific aquatic insects to lower taxonomic form.

ENVS 344. ICHTHYOLOGY (4)

This is an introductory course dealing with the classification, ecology, behavior, and physiology of marine and freshwater fishes. The course deals with a variety of topics such as the diversity of fishes, form and function, reproduction and early ontogeny, quantitative fisheries resource management, behavior, fisheries ecology, and conservation. Laboratory topics include collection, ichthyological methods, aging, classification, and identification of worldwide fishes.

ENVS 345. SUSTAINABLE DEVELOPMENT (3)

This course will explore the concept of developing in an economically viable and sustainable manner that conserves environmental and cultural resources. Concepts such as the design of net-energy-producer homes, incorporation of renewable and energy efficient technologies, use of nontoxic or responsibly harvested “green” building materials, farmland preservation, incorporation of common wildlife space, and the nature of community design will be explored. Prerequisites: ENVS 201, 202, and either ENVS 341 or permission of the instructor.

ENVS 360. SEDIMENTOLOGY AND STRATIGRAPHY (3)

The course focuses on modern and ancient sedimentary environments, relating these environments to the composition and genesis of sediments and sedimentary rocks. Principles of stratigraphy applied in the study of sedimentary rocks and stratigraphic theory are also considered. Three hours of lecture and two hours of lab per week. Prerequisites: GSCI 301; ENVS 308.

ENVS 362. SOIL SCIENCE AND LAB (4)

This course examines physical structure and composition of soil in conjunction with the dynamics of organisms including the microbes and macrobiota within the physical and chemical environment of the soil. The soil classification as well as the role of soils and their biota in food webs and ecosystem processes will be emphasized. The laboratory will provide field and lab techniques used in the study of soil ecology. Prerequisites: BIOL 101 and 102 or BIOL 208 and 209 or equivalent; ENVS 201 and 202, GSCI 301; CHEM 120 or 207.

ENVS 368. GEOLOGY OF NATIONAL PARKS (3)

This course provides an overview of the geology, geomorphology, and historical development of selected national parks. Special emphasis will be placed on regional parks through field trips, visits with park officials and resource managers, and discussions of environmental problems singular to parks. An application of geological method and techniques will enhance students’ knowledge base, providing useful background for student interested in careers in resource management and park administration.

ENVS 371. DOCUMENTATION OF HISTORIC PROPERTIES (3)

Students will learn the methodology for locating, researching, and field recording historic cultural resources. The course will cover photographing, describing, and assessing sites, buildings, and structures and then researching their history as well as mapping and producing site plans, floor plans, and elevations. GIS systems will be introduced. Prerequisites: ENVS 307 and ANTH 370.

ENVS 372. PRESERVATION TECHNOLOGY (3)

Students will learn the history of architectural technology as applied to the construction of old building structures. The course will focus on components of historic buildings and structures, materials and fabric used in the past, as well as approved modern replacement components and compatibility with historic materials. Prerequisite: ENVS 307 or ANTH 370.

ENVS 401. CONSERVATION ECOLOGY (4)

An environmentally focused course emphasizing the varied aspects of the structure, function, and perpetuation of ecosystems. Societal impact on ecosystem structure will be considered through discussion and laboratory analysis, with the recognition of ecosystem disruption a major course focus. Representative topic areas include analysis of aquatic marine populations, types of ecosystems, population regulation, and energy flow. Prerequisites: BIOL 101 and 102 or BIOL 208 and 209 or equivalent; ENVS 201, ENVS 202.

ENVS 422. STREAM ECOLOGY (4)

This course examines the physical, chemical, and biological processes in stream ecosystems. The emphasis is to understand ecological structure and function and to assess anthropological and natural impacts on ecological function. Students in the course will conduct basic aquatic field sampling and laboratory analysis of physical, chemical, and biological components and test hypotheses related to environmental assessment.

ENVS 440. SOLID WASTE/AIR QUALITY MANAGEMENT AND LAB (4)

An applied course focusing on solid waste standards, regulations, and the nature of solid waste and the management, monitoring, and placement criteria employed in landfill siting. Air quality standards and regulations, pollutant composition, and monitoring of pollution sources will constitute the second aspect of the course. Non-point source pollutants for air and solid waste will be considered as well as the more traditional isolated point sources. The course will include site visits and presentations by experts in specific areas of solid waste and air quality management. This course provides the student with an awareness of criteria employed in management of solid waste and air pollution, two critical areas of waste management.

ENVS 441. HYDROLOGY AND LAB (4)

This course will focus on the dynamic nature of earth's surface and subsurface waters and the impact of human exploitation of these water resources. Techniques for monitoring and analyzing both surface and subsurface waters will be presented and practically applied as part of the laboratory component. Water quality standards and the criteria on which these standards are based will also be addressed in this course.

ENVS 450. ENVIRONMENTAL INTERNSHIP (3-6)

A 400-hour internship with students placed within an environmental organization or industry in which they can apply their environmental background in a practical forum. Although flexible arrangements can be formulated for placement, it is preferred that the experience be completed during one summer or a semester after completion of the junior year. This will provide the student with practical experience within the field, enhancing his or her awareness of practical applications of environmental studies and will increase the student's employability.

ENVS 451. SENIOR RESEARCH SEMINAR (3)

Independent research-based course designed as a capstone for seniors. Research on a selected topic will be synthesized as a senior thesis presentation. Students will refine written and oral communication skills as well as focus on the analytical skills gained from the program as a whole. This potentially serves as a mini-internship since data may be generated from the student's association with off-campus agencies.

ENVS 490. APPLIED REMOTE SENSING (4)

An introductory course into the many varieties of remote sensing employed within the environmental sciences and applications of these techniques to field analysis. The course will focus on application of Geographic Information Systems (GIS) to the environmental sciences. These systems employ computers to store, retrieve, transform, and display spatial environmentally oriented data and have a myriad of applications in environmental studies. Remote sensing is typically employed in environmental analyses, ranging from land use to wetlands characterization, requiring the environmental studies student's awareness of these frequently applied techniques.