ECOSYSTEMS AND HUMAN IMPACT (EHI) - COURSES

EHI

Ecological Studies and Human Impact

EHI 310: Restoration Ecology
A study of the rationale, principles, practices, and legal, social, economic, and ethical issues associated with restoring the structure and function of degraded ecological systems. Restoration ecology draws heavily from ecological theory, and the process of restoring a site can in fact provide unique experimental opportunities to test how well ecological theories predict the responses of natural systems. Important ecological concepts applied in restoration include disturbances, succession, fragmentation, system function, as well as, emerging areas such as assembly theory and alternative stable states.
Prerequisite: MAT 125 or MAT 131; BIO 201

EHI 311: Ecosystem Based Management
Ecosystem-Based Management (EBM) is an emerging management paradigm for balancing ecosystem health and human activities. EBM stresses that management must 1) integrate ecological, social, economic, and institutional views, 2) produce sustainable results, 3) consider uncertainty and risks in making management decisions, and 4) utilize adaptive management practices. This course will examine these principles and identify ways they may be put into practice.
Prerequisite: SBC 111 or ENS 101; BIO 201

EHI 321: Human Reproductive Ecology
Course builds on behavioral ecology to focus on why humans make the reproductive choices they do and examines cross cultural and individual differences in fertility, mortality and population growth. Course is organized around current debates in physiological, behavioral, and social aspects of human reproduction. A background in reproductive ecology allows students to think empirically about the demographic component of human/environment interactions, and to better model sustainable futures.
Prerequisite: BIO 201; SBC 115 or SBC 204

EHI 322: Human Ecology
Human ecology investigates how humans and human societies interact with nature and with their environment. Course first introduces the concepts and methods of human ecology. Following this foundation, the course will give special emphasis to empirical examples, case studies and lessons from history. The course will focus on individuals, communities and traditional societies. Human Ecology compliments Human Geography, which studies patterning at the larger scale.
Prerequisite: SBC 116 or ANT 102; BIO 201

EHI 326 - E: Conservation Genetics
This course is an introduction to genetics taught in the context of conservation. The course will cover a basic introduction to Mendelian, molecular, population, evolutionary and meta-population genetics, and then examine specific applications of these concepts to topics in conservation biology.
Prerequisite: MAT 125 or MAT 131; BIO 201

EHI 340 - H: Ecological and Social Dimensions of Disease
The ecology and evolutionary biology of disease will be examined to provide a more general context for human diseases. Pathogens may have large effects on many different types of organisms, from bacteria to plants to humans. We will build on this biological background to examine the social dimensions of disease in human populations and societies, including historical, political and economic aspects, and the roles played by issues of money, power, sexuality, international development and globalization. Specific case studies (the chestnut blight in North America, AIDS in Africa, etc.) will be used to examine concepts and principles in detail in a real-world context. This course will investigate basic fundamentals and recent research on these issues in a unified framework.
Prerequisite: BIO 201

EHI 342 - E: Materials in the Natural and Human World
Course explores in depth the origin, composition, use, bioavailability, mobility, persistence, and fate of selected materials and chemical compounds. Compounds or materials, such as DDT, aldicarb, freon, plastics, organotin, nuclear fuel, antibiotics, and carbon nanotubes, are used to illustrate how man-made substances once released into the environment can lead to environmental degradation, ecological degradation, and/or public health issues.
Prerequisite: ENV 115 or CHE 131; BIO 201

EHI 343 - H: Sustainable Natural Resources
This course explores in depth the economic viability, social acceptance, and potential of sustainable natural resources to replace non-renewable resources. Examples are drawn from water resource management, agriculture, forestry, fisheries, and renewable energy resources (wind, solar, biofuel, etc.). There is particular emphasis on examples of integrated, participatory and sustainable natural resources management project in less developed countries.
Prerequisite: SBC 111 or ENS 101; ENV 115 or CHE 131; BIO 201

EHI 487: Research in Ecosystems and Human Impact
Qualified advanced undergraduates may carry out individual research projects under the direct supervision of a faculty member. May be repeated.
1-6 credits, S/U grading

SBC

Sustainability Block Curriculum

SBC 104 - B: Introduction to Moral Reasoning
An introductory inquiry into the formation and evaluation of moral judgments and reasoning. The major theories and problems of ethics are surveyed, such as utilitarianism, Kant's categorical imperative, ethical relativism, egoism, and various concepts of the good and virtue. Readings from historical and contemporary figures.
3 credits

SBC 111: Introduction to Sustainability Studies
Survey course introduces concept of sustainability. Sustainability is often defined as the ability to provide for the needs of the world's current population without damaging the ability of future generations to provide for themselves. This course reviews the needs of the current population and future generations, trends that affect our ability to provide those needs, and possible solutions that are environmentally, economically, and socially acceptable.
3 credits

SBC 113 - E: Physical Geography Lecture
This study of geosystems examines modern environmental problems through quantitative methods, analysis, and modeling grounded in basic and applied science and research. The goal of the course is to introduce students to the fundamental processes that dominate the atmosphere, hydrosphere, lithosphere, and biosphere, their characteristics and complex interactions, and their impact on human life and society.

3 credits

SBC 114: Physical Geography Lab
This laboratory course provides hands on experience in understanding the geosystems, including distribution and interrelationships of climate, vegetation, soils, and landforms.

Pre- or corequisite: SBC 113
1 credit

SBC 115: Introduction to Human Demography
An introductory course on the study of human population. Measurement issues and data in demographic analysis, as well as demographic perspectives on the basis of a review of major sources of information about population studies will be presented. Theories incorporating social, economic and political explanations for influences on human population growth will be considered. Population processes, with focus on fertility, mortality and migration, are reviewed. Population structure and characteristics, the interaction of the population processes and the number of people in a society of a given age, sex, race, ethnicity, socio-economic levels, martial status, and gender, are reviewed. Major issues related to sustainability (such as economic development, food and pollution, urbanization, gender and minority empowerment, and the human relationship and ecology with other organisms and species) are reviewed.

Prerequisite: MAT 125, MAT 131, MAT 132, or level 6 or higher on math placement exam.
3 credits

SBC 116: Introduction to Human Geography
Survey course introduces geography as a social science by emphasizing the relevance of geographic concepts to human problems. Course emphasizes globalization and cultural diversity.

3 credits

SBC 117 - D: Design Drawing
This introductory course exposes the student to the fundamental theories and practices employed in visually representing design concepts from observational through technical and speculative drawing. The course content introduces the student to contour drawing, rendering, orthographic projection, and pictorial drawing. Project work engages the student in the application of the above-mentioned drawing techniques and develops skills through the solution of student tailored problems.

3 credits

SBC 200 - F: Human Settlement: History and Future
The history of city growth over the millennia as affected by technological change is a basis for understanding the future of human settlement. More than half the world's population currently live in cities and urbanization continues on a global scale. The universality of urban development and resulting patterns will be presented as well as limits on growth of cities. Architectonic and socioeconomic planning theories and strategies for sustainable growth are presented. The development of Long Island, which is a microcosm of national and global patterns, will be discussed in detail.

3 credits

SBC 201: Systems and Models
Introduction to the dynamic modeling of complex systems with feedbacks. Students will learn to use simulation software that facilitates the visualization, formulations, and analysis of systems. Students will learn about systems with positive and negative feedbacks, the effects lags on system performance, and the difference between stocks and flows. Systems studied will include ecological models, economic models, chemical models, population models, epidemiological models, and models that include the interactions between population, economic development, and the environment.

Prerequisite: MAT 125; EHI, EDP, SUS, COS, or EHM major, or permission of the instructor
1 credit

SBC 203 - G: Interpretation and Critical Analysis
An introduction to interdisciplinary inquiry and representation in arts, culture, and theory with emphasis on the roles of analysis, argument, and imagination in multiple media. Requires serious engagement with sophisticated texts.

Pre- or Corequisite: WRT 102
3 credits

SBC 204 - E: Population Studies
The course will present basic mathematics of population growth and introduce various approaches for modeling populations, including population viability analysis (PVA), the quantitative assessment of the extinction risk of rare species or populations, takes biological information (habitat requirements, birth and death rates, population size) and makes predictions about future population sizes. Real examples will be discussed for a range of organisms, from bacteria to plants and mammals. This course will provide also the background for understanding human population growth. The impacts of human population growth in the developed and developing world on the ecology of other organisms, habitats and systems will also be discussed.

Prerequisite: MAT 125, SBC 201
3 credits

SBC 205: Introduction to Geospatial Analysis (lab course)
Introduction to geographic information systems (GIS) and remote sensing techniques as applied to documenting, mapping, analyzing, interpreting, and managing natural and cultural resources. Types of GIS data, computer hardware and software used for geospatial analysis, basic cartography, and global positioning system (GPS).

1 credit

SBC 206 - F: Economics and Sustainability
Introduction to the basic economic concepts used in sustainability analysis. Students will learn the basic concepts and how to apply them in various context. Topics include the analysis of situations in which the behavior of individuals indirectly affect the well-being of others, strategic behavior and the environment, and the use of market-oriented policies to help in the stewardship of the environment.

Prerequisite: ECO 108
3 credits

SBC 307 - K: American Environmental History
This course provides an overview of the history of how Americans have used, viewed and valued the natural environment. Beginning with the Indians and the early colonists (15th-16th centuries), the course will examine the cultural, social, economic, political, and technological currents that shaped North Americans' relationships with their environment in early and later industrial eras, after World War II, and finally, in the late 20th and early 21st centuries. Historical snapshots will center on people living in more natural
places, such as farms and forests, as well as
more built places, such as factories, cities, and
suburbs. Events in the northeastern U.S. will
provide a geographic focus, but the course will
also look at related happenings elsewhere on
the North American continent and beyond.
Finally, it will examine at the growing array of
movements that have identified themselves as
‘environmental,’ at the ‘greensness’ of modern
culture, and at the environmental dimensions
of a globalizing era.

Prerequisite: U3/U4 standing
3 credits

SBC 308 - K: American Environmental
Politics

This course will survey the politics of
environmental policy-making in the United
States. It examines how contrasting political,
economic and social interests and values have
cashed and contested with one another, and
the exerted power, in the environmental policy
realm. The course will explore past precedents
and roots, but with a view to explain the shape
of this realm in the modern United States,
including the many actors and institutions:
local, regional and national governments,
non-governmental organizations and interest
groups, as well as the public. It will look
at the main patterns by which these groups
have defined environmental problems and
formulated and implemented solutions. A chief
goal is to illuminate how and why solutions
of real-world environmental problems, if they are
to be effective, differ from those of scientific
or engineering puzzles.

Prerequisite: POL 102
3 credits

SBC 309: Global Environmental Politics

This course will explore the politics of
environmental policy-making within the
international realm. Focused especially on
environmental dilemmas that cross national
boundaries (i.e., pollution), or that are shared
by multiple nations (i.e., global warming)
it will look at the ways that such problems
have been defined and their solutions sought,
both with and without an over-arching state
or governance. It will survey the many groups,
interests and values that have clashed and
competed with one another to exert power
and influence international environmental
policies, as well as the variety of international
institutions and agreements that have sought
to formulate and implement solutions. One
goal is to illuminate how and why effective
solutions to global environmental problems
differ from those to scientific or engineering
puzzles. The course also aims to spur student
engagement with the sometimes overwhelming
nature of global environmental threats, the
tenuous and sometimes counterproductive
ways that knowledge and power can be linked,
and the ways individuals may act powerfully in
service of ‘sustainability.’

Prerequisite: SBC 111, ENV 115, ENS 101,
GEO 101, or permission of instructor
3 credits

SBC 310: Migration, Development and
Population Redistribution

This course draws upon the contributions
of various social and natural sciences (including
population and urban geography, demography,
political science, sociology, history, economics,
public health and environmental sciences) to explore the effects of migratory
and demographic shifts on the environment,
social welfare, public health, economic
development, ethnic diversity, urbanization,
public policy and planning. It will examine
the political, social, environmental, health and
economic effects on sustainability.

Prerequisite: SBC 115
3 credits

SBC 311 - H: Disasters and Society: A
Global Perspective

This class introduces students to the
sociological examination of natural,
technological, and industrial disasters.
Students will explore how and why disasters are
fundamentally social events: What do
disasters reveal about society? Why are the
human consequences of disasters unequally
distributed? What are the typical ways in
which states, organizations, and communities
respond to disasters? Focusing on case studies
from around the world, students will discuss:
What are the long-term/short-term causes of
particular disasters? What forms of suffering
the disasters under consideration generated?
What state/civil society actions did they
trigger? What advocacy networks were put in
place in their aftermath?

Prerequisite: SBC 111, or ENS 101, or GEO
101; POL 102 or SOC 105
3 credits

SBC 312 - F: Environment, Society, and
Health

This class examines the interactions between
environment, social structures, and institutions.
The first part of the class examines the ways
in which environmental issues are perceived
and constructed by various social actors (lay
public, state officials, scientists, activists,
media). The second part of the class will
examine the differential impact of class, race,
and gender on the distribution of hazards
and risks (what is commonly known as
‘environmental inequality’). In the third part
of the class, students will be introduced to
different cases of ‘contested environmental
illnesses’ (cancer, lead-poisoning, asthma).

Prerequisite: SBC 111, or ENS 101, or GEO
101; POL 102 or SOC 105
3 credits

SBC 320 - J: Sub-Saharan Africa:
Geography, Cultures, and Societies

This course presents a broad perspective
on Sub-Saharan Africa, a region of sharp
geographic, cultural, and economic contrasts.
The legacy of the region’s triple heritage
(indigenous, Islamic, and European) is
presented as a framework for understanding
the complexity and diversity of contemporary
Sub-Saharan Africa in terms of distribution
of languages, religions, ethnicity, family
relations, and governance systems. The
influence of globalization, migration, HIV/
AIDS, conflicts, population growth, and
socioeconomic development policies on modern Sub-Saharan African are discussed.

Prerequisite: Junior or Senior Standing
3 credits

SBC 321 - G: Ecology and Evolution in
American Literature

This course is a review of 19th- and 20th-
century American writers who trace the
evolution of the US with respect to ecological
practices through various multicultural
perspectives. Literature covered will include
transcendentalist essays, utopian/dystopian
novels, ecofeminist fiction, and journalism.

Prerequisite: SBC 203 or EGL 204
3 credits

SBC 325: Environmental Writing and
the Media

An examination of multiple genres (including:
photo journalism, literary nonfiction, fine
art and advertising and documentary film)
in order to understand ways in which these
genres are utilized to inform and manipulate
public opinion regarding the environment.
The culmination of the course will be a final
project using multiple genres.

Prerequisite: WRT 102
Advisory Prerequisite: SBC 203
3 credits

SBC 325: GIS Design & Applications II

The course builds upon the topics covered in
GIS Design and Application I. It emphasizes
the applications of GIS in solving real-world
problems. Students are expected to gain an
understanding of GIS theory, methodology
and most importantly application. Students
are also expected to demonstrate abilities of spatial thinking, spatial analysis, and be able to solve practical spatial problems utilizing a GIS. Because GIS is both a tool for analysis and the visual communication of these data, students will be required to develop a GIS presentation, much as would be expected in a professional setting. This independent project will constitute a substantial portion of the final grade. This is a Windows based computer class with the majority of students work involving GIS computer software.

Prerequisite: SBC 313
3 credits

SBC 330 - G: Extreme Events in Literature
A course that examines the depiction of extreme events (both natural and human-related) in literature, journalism, art, and film, with special emphasis paid to the extended political and social issues that are raised by the events in question.

Prerequisite: SBC 203 or EGL 204
3 credits

SBC 331 - G: City, Suburb, Sprawl
A course that traces the shift from city to suburb to sprawl in texts that span the late-nineteenth century through the early twenty-first century, with special attention paid to phenomena such as industrialization, immigration, mass society, globalization, and postmodern hyperspace. An interdisciplinary set of texts will include works by novelists, artists, architects, and literary theoreticians.

Prerequisite: SBC 203 or EGL 204
3 credits

SBC 354: Drawing for Design--CAD
Techniques and Theory of Drawing; Architectural Drawing; Learning Computer Assisted Design (CAD). This course will serve as an introduction to CAD tools relevant to design and architectural rendering.

3 credits

SBC 401: Integrative, Collaborative Systems Studies
Problem-based capstone course.

Prerequisite: U3/U4, CSK 102
3 credits

SBC 475: Undergraduate Teaching Practicum
Work with a faculty member as assistant in a regularly scheduled course. The student must attend all classes and carry out all assignments; in addition the student will be assigned a specific role to assist in teaching the course.

Prerequisites: Permission of instructor and undergraduate director
3 credits, S/U grading

SBC 476: Undergraduate Teaching Practicum II
Work with a faculty member as an assistant in one of the faculty member's regularly scheduled courses. Students assume greater responsibility in such areas as leading discussions and analyzing results of tests that have already been graded. Students may not serve as teaching assistants in the same course twice.

Prerequisites: Permission of instructor and undergraduate director
3 credits, S/U grading

SBC 488: Internship
Participation in local, state, and national public and private agencies and organizations. May be repeated to a limit of 12 credits.

Prerequisites: U3/U4 status and permission of the Undergraduate Program Director
0-12 credits, S/U grading