

COURSE INFORMATION

ENVIRONMENTAL SCIENC COURSES

EV 503 BIOLOGICAL LITERATURE AND SCIENTIFIC WRITING

SPRING ONLY/ALL YEARS

2 credit hours

Survey of biological literature as an assist in thesis and manuscript preparation in the areas of writing, proofreading, literature citation, figure and table preparation. Two hours of lecture weekly.

EV 504 ENVIRONMENTAL LITERATURE & SCIENTIFIC PRESENTATION

SPRING ONLY/ALL YEARS

1 credit hour

This course is designed to develop skills in researching, preparing, and delivering high quality scientific oral presentations while introducing students to timely and worthwhile topics for thesis research or professional projects.

EV 506 PHYSICAL GEOGRAPHY OF MICRONESIA

FALL ONLY/EVEN YEARS

3 credit hours

This course is a study of the origin and characteristics of the physical environments and biogeography of Micronesia through an analysis of physical geographic elements, their patterns of distribution, interrelationships, and problems. Prerequisites: Graduate standing or senior level.

EV 507 ADVANCED STATISTICAL METHODS

FALL ONLY/ALL YEARS

4 credit hours

An advanced course in applied statistical methods as used in the biological and environmental sciences stressing the design and analysis of experimental and observational studies. Lectures will be 4 hours per week. Prerequisites: MA385 or equivalent.

EV 508 SCIENTIFIC COMPETENCE AND INTEGRITY

FALL ONLY/ALL YEARS

3 credit hours

This course examines historical, philosophical, methodological, ethical, and moral aspects of scientific thought and practice in the context of both historical and contemporary issues in natural and environmental science. Readings and discussions are built around classical examples such as the scientific controversy over Continental Drift and Plate Tectonics as well as contemporary environmental issues, ranging from global concerns such as climate and sea level change, to local public concerns such as solid waste management and the safety of tap water. The central objective of the course is to develop the skills and habits of sound critical thinking essential to the progress, ethical practice, and moral application of science.



EV 510 ENVIRONMENTAL SCIENCE: BIOLOGY/ECOLOGY

FALL ONLY

3 credit hours

This course covers concepts of biology needed for further studies in environmental science. Ecological and biological principles are presented including an introduction to ecosystem ecology. Human impacts on the environment on a global and local scale are discussed. Three hours of lecture weekly.

EV 511 ENVIRONMENTAL SCIENCE: GEOSCIENCES/ ENGINEERING

SPRING ONLY/ALL YEARS

3 credit hours

This course is a survey of the key aspects of geology and engineering with which individuals involved in environmental resources investigations should be familiar. Topics include the hydrologic cycle, surface hydrogeology, groundwater movement, engineering measurements, statistical analysis, instrumentation for environmental investigations, and fundamentals of engineering geology and environmental geology. Three hours of lecture a week plus field trips. Prerequisites: MA161a-b, CH100 and CH101 or equivalent.

EV 512 ENVIRONMENTAL SCIENCE: ECONOMICS- MANAGEMENT-LAW

SPRING ONLY/ALL YEARS

3 credit hours

This course equips students with the fundamental elements of microeconomic theory, concepts of environmental economics, techniques of environmental management, and elements of environmental law that are essential for efficient and sustainable conservation, allocation, and management of natural resources, as well as the rational evaluation and effective maintenance of environmental safety and quality.

EV 513 ENVIRONMENTAL IMPACT ASSESSMENT

FALL ONLY/EVEN YEARS

2 credit hours

Discussing, structuring, writing, and evaluating environmental impact assessments, particularly as they apply to Guam and other tropical islands. Course will focus on producing formal environmental impact statements for actual, proposed and hypothetical development projects on Guam.

EV 517 CULTURAL ECOLOGY

FALL ONLY/ODD YEARS

3 credit hours

Cultural ecology looks at the relationship between humans and their biotic and physical environments. Using diachronic and comparative perspectives, this course will survey the cultural ecology of Micronesian islanders. Particular attention will be given to the following themes: history, theory, and methods of cultural ecology; comparison of different approaches to the study of cultural adaptation; adaptation in permissive and marginal environments; and culture change in spatial and temporal perspectives. The format emphasizes seminar discussions and student presentations, but will also include some lectures, slides, films and videos. Prerequisite: Consent of instructor, MI501, MI502, or MI503.

EV 525 EVOLUTIONARY BIOLOGY

FALL ONLY/EVEN YEARS

3 credit hours

This course provides a survey of the origin and evolution of life on Earth, exploring the history and major features of evolutionary change through time and the mechanisms responsible for those changes. The course will also consider evolutionary aspects of genetics, development, ecology, biogeography, systematics and paleontology. Prerequisite: Genetics or consent of instructor.



EV 529A ENVIRONMENTAL CONTAMINATION & TOXICOLOGY I: FUNDAMENTAL PRINCIPLES & BASIC CONCEPTS

SPRING ONLY/EVEN YEARS

3 credit hours

This course covers the fundamental principles and mechanisms governing the interaction of pollutants with natural systems. The basic concepts of classical and environmental toxicology are also addressed with emphasis on contaminant absorption, distribution, metabolism, systemic toxicology, carcinogenesis, toxicity testing and risk assessment. The course concludes with a general introduction to air, land and water pollution. Three hours of lectures weekly. Prerequisites: BI157, BI158, CH102 and CH103 or equivalent.

EV 529B ENVIRONMENTAL CONTAMINATION & TOXICOLOGY II: MAJOR CLASSES OF ENVIRONMENTAL POLLUTANTS

SPRING ONLY/ODD YEARS

3 credit hours

This course focuses on classic and contemporary groups of environmental contaminants and their impact on organisms, ecosystems and man. Physical and chemical properties of each contaminant group are discussed in relation to their environmental distribution, fate and toxicity. Occupational health related pollution problems and pollution monitoring strategies are also discussed. Three hours of lectures a week. Prerequisites: BI157, BI158, CH102 and CH103, or equivalent, or consent of instructor. EV/BI529a is also highly recommended as it provides the foundations upon which EV/BI529b is built. Undergraduates may enroll in the course with instructor's consent.

EV 535 TROPICAL CLIMATE & CLIMATE VARIABILITY

FALL ONLY/EVEN YEARS

3 credit hours

This course is a study of the climate of the world's tropical regions. Natural variations in rainfall are studied. Mechanisms for short-term fluctuations and long-term changes including El Niño, La Niña, Quasi-biennial stratospheric oscillations, and the ice ages are presented. Also discussed is what constitutes an optimal climate, and whether or not an ice age is worse than a warmer world. Prerequisites: BI412G, EV511, BI/EV503, or consent of instructor.

EV 536 HURRICANES AND TYPHOONS: AN OVERVIEW OF TROPICAL CYCLONES

SPRING ONLY/ODD YEARS

3 credit hours

This course focuses on tropical cyclones and explores their structure and physics of formation. The climatology of tropical cyclones is examined ranging from the global distribution to inter-annual variability and possible changes to tropical cyclone climate from an anticipated greenhouse-gas-induced global warming. Prerequisites: MA203, PH251, PH210, CH102, CH102L, or consent of instructor.

EV 537 APPLICATION OF REMOTE SENSING TO WEATHER AND CLIMATE

FALL ONLY/ODD YEARS

3 credit hours

This course focuses on the applications of remote sensing platforms for observing and forecasting the weather, and for monitoring earth's climate system. Students explore the history of the international meteorological satellite programs and the United States' effort to modernize its weather satellite constellation. The history of the weather radar is explored, which culminates in the nationwide installation of NEXRAD Doppler weather radars (one of which is on Guam). Principles of satellite and radar physics are introduced. Interpretation of the structure of weather systems from satellite and radar imagery is covered. The use and function of the many instruments onboard satellites are described. Students participate in real-time investigations of local and regional weather patterns using satellite and radar imagery. Prerequisites: MA203, PH210, PH251, CH102, CH102L, or consent of instructor.

EV 542 HYDROLOGY

FALL ONLY/EVEN YEARS

3 credit hours

An in-depth coverage of the topics in engineering hydrology with which all individuals involved in environmental resources investigations should be familiar. Topics will include the hydrologic cycle, surface and groundwater movement and engineering measurements, instrumentation, and analyses appropriate for environmental investigations. Three hours of lecture a week plus field trips. Prerequisites: MA161a-b, or MA165; and MA385, MA387/L or BI412/L

EV 543 HYDROGEOLOGY

FALL ONLY/ODD YEARS

4 credit hours

An introduction to applied hydrogeology, with emphasis on fundamental physical and geological concepts and methods of analysis. Covers physical principles of groundwater movement, geologic origin and characteristics of aquifers, basic water chemistry and interaction with geologic materials, introduction to well hydraulics and aquifer evaluation, and environmental applications. Two hours of lecture plus three-hour lab each week. Prerequisites: Elementary calculus (e.g., Math 203), basic college chemistry (e.g., Chem 102), and concurrent enrollment or completion of EV511 or permission of instructor.

EV 547 PACIFIC ISLAND GEOLOGIC AND CLIMATIC HISTORY

SPRING ONLY/EVEN YEARS

3 credit hours

This course provides students with an understanding of the fundamental processes and effects of earth's geologic and climate history that have created the unique environment of the pacific basin and the specific processes and conditions that have shaped the environments of the pacific islands. The course concludes with an examination of geologic and climatic hazards of concern to pacific island residents. Prerequisites: science or engineering background, and instructor's permission

EV 557 POPULATION ECOLOGY

FALL ONLY/ODD YEARS

3 credit hours

EV/BI 557 This course provides a quantitative background of the processes and principles associated with population dynamics. Both theoretical approaches and applied modeling techniques are used to help students visualize patterns observed in natural systems. The course is relevant for both marine and terrestrial biology or environmental science graduate students, however, examples are mainly focused on marine ecosystems, and coral reefs in particular. Prerequisites: BI157-157L and BI158-158L. Corequisite: BI410.

EV 557L POPULATION ECOLOGY LABORATORY

FALL ONLY/ODD YEARS

1 credit hour

EV/BI 557L This lab is required for EV/BI557, "Population Ecology". The labs provide a quantitative background of the processes and principles associated with population dynamics. Labs consist of applied modeling techniques to help students visualize patterns observed in natural systems. The course is relevant for both marine and terrestrial biology or environmental science graduate students, however, examples are mainly focused on marine ecosystems, and coral reefs in particular. Prerequisites: BI157-157L and BI158-158L. Corequisite: BI410.

EV 558 ADVANCED GEOSPATIAL METHODS

SPRING ONLY/ALL YEARS

4 credit hours

This course focuses on applications of geospatial technologies, including geographic information systems (GIS), remote sensing, and the global positioning system (GPS). It emphasizes applications of geospatial technologies to environment science and related fields. Topics include geospatial data collection and processing, visualization, analysis, and modeling; geospatial statistical analysis; mobile cloud based geospatial applications; and integration of geospatial technologies. Students will gain an understanding of Advanced Geospatial Techniques; demonstrate abilities to geospatial data collection, processing, and analysis by the means of GIS, remote sensing and GPS; and be able to solve practical problems in environmental science and related fields using geospatial technologies. The course aims to equip students with understanding and experience with the practical use of geospatial technologies in natural sciences, particularly environmental science. Prerequisites: Recommended prerequisites for Environmental Science Graduate Program, and fundamentals of GIS or equivalent, or consent of instructor. Undergraduate students may enroll in the course with the permission of instructor.

EV 561 URBAN LANDSCAPE MANAGEMENT

FALL ONLY/EVEN YEARS

3 credit hours

This course focuses on the integration of ecological theory with vegetation management and includes aspects of horticulture, landscape design, recreation studies, planning and financial management. This course emphasizes the use and management of indigenous and introduced vegetation in the public landscape and explores both scientific and philosophical ideas on reasons for undertaking certain practices.

EV 570 ENVIRONMENTAL ECONOMICS

FALL ONLY/EVEN YEARS

3 credit hours

This course provides a frame of thinking about environmental science in a context of economic analysis. As an applied course, students are prepared to use economic analyses in environmental cases to consider issues such as: valuing the environment; resource allocation over time; opportunity costs; cost/benefit analysis; analysis of environmental options and externalities; modeling economic and ecological systems; effects of population growth and demand on the global environment; and studies of environmental impacts and policy responses. Regional planning and policy issues will be profiled. Prerequisite: Consent of instructor.

EV 581 PHYSICAL OCEANOGRAPHY

SPRING ONLY/EVEN YEARS

3 credit hours

This course is intended to give students a view to how wind, radiation, gravity, friction, and the Earth's rotation determine the ocean's temperature and salinity patterns and currents. Some important processes we study include heat budget of the oceans, exchange of heat with the atmosphere and the role of the ocean in climate, surface mixed layer waves in the ocean, geostrophy, Ekman transport, and Rossby waves. Students learn how to explain physical features of the ocean ranging from microscopic turbulence to global circulation. Prerequisites: MA-203 OR CONSENT OF INSTRUCTOR. Recommended: MA204, PH-251 and PH-252.



EV 598 ENVIRONMENTAL SCIENCE INTERNSHIP

FALL/SPRING/ALL YEARS

1 credit hour

Students gain professional skills in the environmental market place working with a mentor at a local environmental or engineering firm or an appropriate GovGuam or Federal Government agency. This course can be taken twice, but a maximum of two total credits will be allowed as electives toward the Master of Science Degree. Students are expected to intern between 10 and 12 hours per week per credit of EV598.

EV 695 ENVIRONMENTAL SCIENCE THESIS

FALL/SPRING/ALL YEARS

1 - 6 credit hours

EV 698 ENVIRONMENTAL SCIENCE THESIS

FALL/SPRING

1 - 6 credit hours

Environmental science professional track internship