

**UNIVERSITY OF THE
DISTRICT OF COLUMBIA**
COLLEGE OF AGRICULTURE, URBAN SUSTAINABILITY
AND ENVIRONMENTAL SCIENCES

DEPARTMENT OF ARCHITECTURE AND URBAN SUSTAINABILITY

COURSE DESCRIPTIONS: URBAN SUSTAINABILITY (ENVIRONMENTAL SCIENCE / ENSC)

ENSC145/ 146 Introduction to Env. Science Lecture / Lab (4) A course in which students will investigate the atmosphere, hydrosphere, lithosphere, biosphere, and the natural cycles which influence man. Students will be engaged on the impact of humans on these spheres through water and air pollution, solid waste disposal and noise. The course examines urban sustainability, environmental, social and economic development and policies, politics and practices as well as the role of cities in global environmental change. The lab course provides students with a hands-on experience on what was covered in the lecture of ENSC145. Topics include measurement, density, moisture and dry matter content of leafy vegetables, seed germination, respiration, cell structure, acids and bases, soils, and the student's own environment.

ENSC225 Env. Studies and Sustainability (3) The introduction to environmental science and sustainability course is an interdisciplinary course designed for non-majors. It introduces students to how the wellbeing of humans is integrally linked to the wellbeing of the other species with which we share the planet. The course focuses upon the fundamental principles of environment and sustainability concepts. The course content includes environmental impact, water quality, energy and water use efficiency, transportation, built environment, ecosystem services, biodiversity, climate change and green business. It will enable students to make an informed decision on their day-to-day activities to protect the environment.

ENSC250/ 251 General Ecology Lecture / Lab (4) An elective study and survey of those concepts which define and explain the interrelationships between organisms and the ecosystem. Students examine campus ecology. With a focus on the human impact on environmental processes, the class will consider the living (biotic), non-living (abiotic), and the interdisciplinary nature of ecological problems and their resolutions. While considering sustainability and stewardship, the course topic will include water resources, energy, forests, and biodiversity. The ecosystems as they relate to the sustainability of both. Examines the effect of human populations and socio-cultural variables on contemporary environmental changes at global and local scales with an emphasis on sustainable use, management, and conservation of natural resources, biodiversity, and ecosystem services. Students conduct and participate in processes designed to enhance skill and knowledge development.

ENSC352/ 353 Sustainable Agriculture Lecture / Lab (4) Prerequisite: ENSC145/ 146. This elective course is designed to teach students the principles of sustainable agriculture and the use of these principles to replace today's agricultural practices that are dominated by high inputs of inorganic synthetic chemical fertilizers and toxins in attempts to control disease and insects, which at the same time pollute our air and water resources. This course will instruct students how to implement the sustainable agricultural approach of environmental, economic, societal and intergenerational sustainability by adopting an integrated system of agricultural production that lessens the dependence upon synthetic chemicals such as inorganic fertilizers and toxic pesticides. The lab course provides students hands-on knowledge on how soil-plant relationships are affected by environmental factors such as air, water and light. It is also designed to show students how agricultural practices such as soil and soil components, adding soil amendments for maintaining soil fertility and comparing the sustainable agricultural principles of growing plants with organic composted materials in lieu of inorganic commercial nitrogen, phosphorus and potassium.

ENSC354 / 355 Environmental Toxicology Lecture / Lab (4) Prerequisite: CHEM-111. Elective course. Students learn how toxic materials can impact their health and the health of plants and animals around them. We can be exposed to toxic materials through many routes, and they can affect us in a variety of ways such as acute and chronic diseases, reproductive failure, or low survival in animal and plant populations. There are a wide range of materials that can be toxic to humans, from industrial chemicals, lead in water, radioactivity, pesticides, and pollutants in our air, food or water. By contrast fish can find changes or levels of salinity changes to be toxic. The lab course provides students hands-on practice using computer models and testing protocols in environmental chemistry labs, as well as procedures used in the District (of Columbia) Department of the Environment and the District Department of Health.

ENSC357 Urban Sustainability Lecture (3) Rapid urbanization has resulted in environmental problems such as air and water pollution. In addition, it can also create a problem of economic and social justice. This course will explore the socio-economic and environmental dimensions of sustainability in cities. The course will analyze the contemporary urban environmental crisis in the context of global population growth, global climate change, and critically evaluate government policies, and economic development. The course will examine programs that address the challenges of sustainability in both developed and developing countries. Relevant issues such as environmental justice will be discussed.

ENSC 359 Urban Water Quality Management (3) This elective course is a team-oriented, experiential and problem based interdisciplinary course open to majors and non-majors alike. This course is designed to enhance student's competence in theoretical and practical application of urban water quality sciences and related technologies to address the urban water quality problems and management. The course content includes environmental regulation, water quality, urban runoff, data mining, information technology, dynamic interactive online course delivery, and sustainable development of interest to students from all majors. This course will be team-taught by faculty mainly from school of engineering and applied sciences and CAUSES.

ENSC450 Environmental Health Lecture (3) A course which examines the effect of gaseous and particulate pollutants on human health. The epidemiology, pathogenesis, diagnosis, and etiologic agents of diseases are discussed. Students will analyze environmental toxic chemicals and discuss their effect on human health. Other topics include hazardous wastes, pests, pest control, food additives, and air-, water-, and soil-borne organisms. The course will introduce students to a full continuum of analytical perspectives on global climate change and its documented and projected implications for human health. The course will also examine the relationships between the health of populations and health determinants in the context of environmental sustainability. Sustainability necessitates balance between natural capital and uses of natural capital for human and non-human ends.

ENSC456 Research Methodology (1) This is an introductory course to study the application of research methods appropriate to professional studies. The course will provide a general introduction to research methods, as well as providing practical exposure to problem statements, literature reviews, writing the research proposal, and organization of the research report. Quantitative and qualitative research methodologies will be briefly covered in preparation for the later courses in these areas.

ENSC460 Climate Change and Carbon Reduction Lecture (3) An introductory course presents and explores the impact of anthropogenic activities on the global climate change and mitigation measures. Course topics include the climate system, greenhouse effect, assessing carbon footprint, carbon reduction, and science and politics of global warming and climate change impacts on the environment. The focuses on the cause and effect of global climate change, and ways to reduce greenhouse gas emissions.

ENSC461 Environmental Policy Lecture (3) Students work with environmental science and environmental regulations in order to understand how these are used to translate environmental policy into action. It builds on knowledge of science, as well as major development and pollution issues to analyze what laws and regulations have worked well and where changes are needed in both behavior and the rules of society. Comparisons are made at the local District of Columbia level, as well as for States, National and International levels. Thus, the course provides a basis for understanding the relationships between politics and science. It allows the student participant an opportunity to become versed in the policy view as a whole while becoming skilled in an environmental area of choice.

ENSC470 Senior (Writing) Project (3) Students undertake a project in which they explain five major environmental problems, their cause, and their environmental impact.

ENSC471 Internship (4) Students undertake an internship with local or national environmental agencies in which they are engaged in the daily activities of these agencies; and evaluate their personal strengths with regard to desired career and professional goals.

ENSC- 488: Environmental Field Problems (4) An internship course with the District (of Columbia) Department of the Environment, Students are engaged in the daily activities of the District of Columbia Department of the Environment. The course is open to Bachelor of Arts in Urban Sustainability Degree Program students with junior or senior standing.