

## Civil Engineering Undergraduate Science Electives

Effective 2010, Civil Engineering graduates are required to take a three credit hours science elective in addition to the required Chemistry and Physics courses. The elective must not be Chemistry or Physics. The following classes all count as science electives. Please refer questions to the Academic Program Coordinator.

### **ASTR 1010 SURVEY OF ASTRONOMY**

[3 hours] General astronomy, including appearance of the sky and nature and evolution of the Earth, Moon, solar system, stars, galaxies and the Universe.

### **ASTR 2010 SOLAR SYSTEM ASTRONOMY**

[3 hours] A quantitative introduction to the contents, origin and evolution of the solar system, as revealed by recent advances in space exploration. High school mathematics at the level of graphs, algebra and elementary logarithms is required.

### **ASTR 2020 STARS, GALAXIES, AND THE UNIVERSE**

[3 hours] A quantitative introduction to the nature and evolution of stars, galaxies and the universe, as revealed by observation and physical theory. High school mathematics at the level of graphs, algebra and elementary logarithms is required.

### **BIOL 1120 Survey of Biology**

[3 hours] A survey of major biological principles and phenomena in various plants and animals with emphasis on man.

### **BIOL 2150 Fund of Life Science I**

[4 hours ] An introduction to the diversity of multicellular life on earth, evolution and physiological adaptations.

### **EEES 1010 Physical Geology**

[3 hours] Introduction to classification and origins of rocks and minerals, surficial processes and landscape development, groundwater and other natural resources, geologic structures, earthquakes and the earth's interior, plate tectonics and geologic time.

### **EEES 1050 Geological Hazards and The Environment**

[3 hours] Introduction to risk mitigation involving hazardous geological processes and materials: volcanic eruptions, earthquakes, floods, ground subsidence and collapse, radon, asbestos and others.

### **EEES 1130 Down to Earth: Envrnmt Science**

[3 hours] Evaluation of environmental controversies using ecology, economics and human values. Issues range from global change, overpopulation, food production, pollution, disease, endangered species, to unique habitats including rainforests and coral reefs.

### **EEES 1150 Marine Biology**

[3 hours] An exploration of life in the world's oceans, emphasizing how marine organisms thrive in broadly diverse environments. Topics include the major ocean habitats, and ecological relationships among associated flora/fauna.

### **EEES 1160 Plants and Society**

[3 hours] This course centers on the importance of plants to our planet. Includes an introduction to botany and discussion of plants that provide food, materials, spices, medicines, drugs and poisons.

### **EEES 1170 Microbes and Society**

[3 hours] This course describes how microbes impact everyday life in areas including food safety, agriculture and bioterrorism.

### **EEES 2010 Introduction to Env Studies**

[3 hours] Introduction to issues currently affecting environmental quality. Fundamental scientific concepts relating to those issues and ethical, economic, legal and political considerations that affect the resolution of environmental problems.

### **EEES 2100 Fundamentals of Geology**

[3 hours] Consideration of earth materials and the dynamic external and internal processes active on earth; the physical and biological history of the earth.

### **EEES 2150 Biodiversity**

[3 hours] Examination of the diversity of life on earth and its evolution, systematics and behavior; the structure of ecosystems and concepts of population and community ecology.

### **EEES 2220 Climate Change**

[3 hours] An overview of the understanding of climate change and role of human activities, including atmospheric processes, greenhouse effect, carbon cycling, physical evidence, impacts, and proposed global actions in response.

### **EEES 2230 Earth History & Paleontology**

[3 hours] The morphology and paleoecology of fossil taxa, significant strata, and tectonic events important to the interpretation of paleoenvironments and Earth history are stressed. Field trip(s) required.

### **EEES 2400 Oceanography and Water Resources**

[3 hours] Physical, chemical, geological and biological nature of oceans and ocean basins. Ocean resources, circulation, climate and the hydrologic cycle. Fresh water resources and resource management

### **EEES 3250 Engineering Geology**

[3 hours] Application of geologic principles to engineering practices (dams, tunnels, drainage, foundations and water supply). Labs stress rock and mineral identification, quality control tests in engineering design and construction using rock.

