ENGINEERING: ENVIRONMENTAL (ENV)

ENV 3006C - Fundamentals of Environ Engrg (3 Credits)
Environmental engineering dimensions and units. Material and energy balances, kinetics, stoichiometry, and reactors. Ecosystems. Water Quality, Water Supply, Water Treatment. Wastewater Collection, Wastewater Treatment, Wastewater Re-use. Solid Wastes, Hazardous Wastes. Air Quality, Atmospheric Pollution Control, Climate Change. Risk. Laboratory Safety.
Prerequisite(s): (PHY 2048C or (PHY 2048 and PHY 2048L)) and MAC 2312 and (CHM 1045C or (CHM 1045 and CHM 1045L))
Attribute(s): SUSC - Sustainability Component

ENV 3502C - Water Treatment Engineering (3 Credits)
The theory and design of unit operations normally used in the practice of Environmental Engineering for the production of potable water and the physical and chemical treatment of waterborne contaminants.
Prerequisite(s): EES 3204C
Attribute(s): SUSC - Sustainability Component

ENV 4101C - Atmospheric Pollution (3 Credits)
Source, effects, and regulations of air pollutants. Meteorology and dispersion of air pollution. Sampling and analysis of gaseous and particulate air pollutants. Photochemical air pollution and mobile sources.
Prerequisite(s): ENV 3006C and CWR 3201C
Attribute(s): SUSC - Sustainability Component

ENV 4341C - Solid & Hazardous Waste Mgmt (3 Credits)
Generation of solid and hazardous waste. Collection, separation and disposal methods, equipment, and costs. Rules, regulations and management systems for proper control of solid and hazardous wastes. Resource recovery systems. Life cycle analyses for recycling and reuse. Evaluation of engineering systems to minimize costs and maximize sustainability.
Prerequisite(s): ENV 3006C

ENV 4509C - Wastewater Engineering (3 Credits)
The theory and the design of processes normally used in the practice of environmental engineering for the treatment of wastes. Biological Processes important to the cycling of carbon, nitrogen, phosphorus and energy in ecosystems; the impact of biological systems on pollutant fate and transport.
Prerequisite(s): ENV 3006C and CWR 3202C
Attribute(s): SUSC - Sustainability Component

ENV 4612C - Sustainability in Engineering (3 Credits)
Sustainable practices are defined and green engineering principles are directed towards engineering design. Life cycle analyses are used to assess environmental, economic, and societal impacts. Topic areas include energy, water, transportation, buildings, food production and infrastructure. ~Previous course number ENV 4612, prior to 201408
Prerequisite(s): ENV 3006C
Attribute(s): SCGR - Sustainability Course Grad Req, SUSC - Sustainability Component, Sustainability Course Grad Req

ENV 4891 - Envir Engr Senior Design (3 Credits)
The design of operations, processes and systems used in Environmental Engineering for protection and remediation of water, air and soil ecosystems. Consideration of ethical , professional licensing, economic and sustainability issues. Rational comparison of alternatives. Previously ENV 4891C ended 201405.
Prerequisite(s): EES 3204C and ENV 3502C and ENV 4509C and ENV 4341C and CWR 4540C and (CCE 4031 or CCE 4031C) and ENV 4101C
Attribute(s): SUSC - Sustainability Component

ENV 4930 - Special Topics in Environ Eng (1-3 Credits)
This course covers topics in environmental engineering, with an emphasis on recent developments. Topics and credits may vary.

ENV 6027 - Bioremediation (3 Credits)
The basic principles of chemical and biological degradation of toxic chemicals, and familiarize the students with the application of the remedial technologies in natural environments. Topics covered will include: 1) occurrence and ecological significance of toxic organic chemicals, 2) chemistry of contaminants, kinetics and mechanisms of degradation (chemical and biological), and 3) current technologies of bioremediation of contaminated soils and water.

ENV 6516 - Sustainable Water Quality Engr (3 Credits)
Biological, physical, and chemical processes used in the advanced treatment of domestic, industrial and hazardous wastes. Regulatory framework, reuse applications and guidelines.