

Department of Civil and Environmental Engineering
Graduate and Senior Undergraduate Elective Courses
Spring 2008-09

ENVIRONMENTAL SEQUENCE

Course:	CIVE 651: Environmental Chemistry and Microbiology
Course Description:	A course that deals with organic, inorganic, and physical chemistry; chemical equilibrium; reaction kinetics; acidity and alkalinity; composition, morphology, and classification of microorganisms; energy, metabolism, and synthesis; growth, decay, and kinetics; biological water quality indicators. Prerequisite: CHEM 202, BIOL 210, or equivalent. Alternate years.
Instructor:	Dr. Pascal Saikaly
Course:	CIVE 656/ENSC 600: Air Pollution and Control
Course Description:	An introductory course on air pollutants, sources, and effects; emissions estimates, regulations, and monitoring techniques; particulate matter characterization; meteorology and atmospheric dispersion; and air pollution control processes. Prerequisite: CHEM 202 or equivalent. Annually.
Instructor:	Dr. Mutasem El Fadel

WATER RESOURCES SEQUENCE

Course:	CIVE 642: Groundwater Hydrology
Course Description:	A course that deals with properties of groundwater, groundwater movement, general flow equations, steady-state well hydraulics, seepage forces, unsteady well hydraulics, infiltration, and groundwater modeling. Prerequisite: CIVE 441. Annually.
Instructor:	Prof. Habib Basha
Course:	CIVE 643: Hydraulics of Open Channels
Course Description:	A course that examines gradually varied flow theory and analysis, spatially varied flow, and numerical modeling of unsteady flow in open-channels. Prerequisite: CIVE 440. Alternate years.
Instructor:	Prof. Constantine Inglessis
Course:	CIVE 647: GIS for Water Resources & Environmental Engineering
Course Description:	A course that introduces the concepts and principles of Geographic Information Systems (GIS) from the perspective of water resources and environmental engineering. It provides coverage of state-of-the-art GIS methods and tools, specifically targeting water resources and environmental applications including: spatial and terrain analysis, geostatistical analysis, watershed delineation and identification of river networks, representation of groundwater and aquifer systems, time series analysis, and development of GIS integrated water and environmental models. Alternate years.
Instructor:	Prof. Hamed Assaf

GEOTECHNICAL SEQUENCE

Course:	CIVE 630: Applied Foundation Engineering
Course Description:	A course on braced excavations, retaining structures, deep foundations, slope stability, and computer applications. Prerequisite: CIVE 530. Alternate years.
Instructor:	Dr. Shadi Najjar

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TRANSPORTATION/GEOTECHNICAL SEQUENCE

Course:	CIVE 660: Pavement Design
Course Description:	A course examining highway and airport pavement design; flexible and rigid pavement types and wheel loads; stresses in flexible and rigid pavements; pavement behavior under moving loads; soil stabilization. Prerequisite: CIVE 461. Alternate years.
Instructor:	Dr. Ghassan Chehab

STRUCTURAL SEQUENCE

Course:	CIVE 610: Advanced Structural Analysis
Course Description:	A course that offers a review of matrix algebra; basic principles of structural analysis: stiffness, flexibility, and energy methods; direct stiffness method for plane and space trusses and frames; linear and nonlinear problems; special problems; computer programming. Prerequisite: CIVE 410. Annually.
Instructor:	Dr. Najib Kasti
Course:	CIVE 623: Bridges
Course Description:	A course that discusses types of bridges; influence lines; loads and their distribution on bridges; serviceability of bridges; methods of design of bridge deck, superstructure, and substructure. Prerequisites: CIVE 410 and CIVE 421. Alternate years.
Instructor:	Dr. Mohamed Harajli
Course:	CIVE 722: Advanced Steel Design
Course Description:	A course investigating stability, column strength, beam-columns, composite steel-concrete construction, plate buckling, plate girders, torsion, and combined torsion and bending. Prerequisite: CIVE 624.
Instructor:	Dr. Bilal Hamad

OTHER (CIVIL)

Course:	CIVE 581: Specifications and Cost Estimation
Course Description:	A course on the structure of construction documents and their interrelationships; bidding requirements; general and particular contract conditions; administrative and procedural requirements for construction; technical specifications; construction cost estimation processes; and unit rates determination.
Instructor:	Dr. Mohamed-Asem Abdul Malak
Course:	CIVE 672: Introduction to Geographic Information Systems
Course Description:	An introductory course on Geographic Information Systems (GIS) and their applications in the planning and engineering fields, alternatives in computer-based graphics, data concepts and tools, network data management and planning applications, and implementation issues. This course is considered to satisfy the departmental requirements in all engineering graduate program.
Instructor:	Dr. Kamal Azar