Additional Courses Offered in CEIE in Spring 2011

CEIE 499-001 Introduction to Experimental Methods: 1 credit (J. Hartmann)
This class is intended to provide students with a survey of common testing and laboratory experimental methods that civil engineers might encounter in their professional practice. Students will fabricate specimens and conduct experiments in the following laboratories at the Federal Highway Administration's Turner-Fairbank Highway Research Center: Concrete and Steel Materials Lab, Structures Lab, Hydraulics Lab, Geotechnical Lab and Asphalt Lab. (Prerequisite CEIE 310) (Fridays noon – 3pm, meets off campus)

CEIE 499-002 Sustainable Water Sanitation in Developing Countries: 3 credits (B. Liner)
This course deals with the principles of infrastructure engineering and planning in developing countries, with a particular focus on sustainable technologies for rural and small-scale water and wastewater. It also incorporates technical, socio-cultural, public health, and economic factors into the planning and design of water and sanitation systems. Upon completion, students will be able to design simple, yet reliable, water supply and sanitation systems for developing countries that are compatible with local customs and available human and material resources. (Thursdays 4:30 – 7:10 pm)

CEIE 499-004 Geotechnical Foundation Design: 3 credits (C. Coronado)
This course is designed to provide students with the tools required for the analysis and design of foundation engineering systems. Topics covered include review of shear strength of soil, subsurface investigations, theories related to the analysis and design of retaining structures, shallow foundations, deep foundations, and slope stability. (Thursdays 7:20 – 10 pm)

CEIE 690[1]-004 Bridge Engineering: 3 credits (F. Ibrahim)
Art and science of practical bridge design and evaluation; bridge design and evaluation methodologies; bridge types to include: reinforced-concrete, slab-on-steel/prestressed-concrete, I-girders; bridge geotechnics (foundations and abutments) in context of design; constructability issues reviewed. (Fridays 4:30 – 7:10 pm)

CEIE 690[1]-009 Environmental Engineering Microbiology: 3 credits (L. Durant)
This course addresses the fundamental aspects of microbial physiology and ecology and their application to environmental engineering processes. Specific topics include cell structure and function, energetics, metabolism, enzyme and growth kinetics, microbial/environmental interactions (e.g. interactions with organic pollutants), biogeochemical cycles, and an introduction to engineering applications including bioremediation, wastewater treatment, biosensors and microbial fuel cells. (Wednesdays 7:20 – 10:00 pm)

CEIE 690[1]-012 Computer Aided Negotiations of Natural Resource Disputes: 3 credits(D. Randall)
Disputes over water are often bitterly fought. Students in this course will tackle a real-world, interdisciplinary water-resources problem using Computer Aided Negotiation (CAN), a process for guiding stakeholders to create a mutually beneficial solution to natural resource disputes. Groups of students playing the stakeholders will identify what they want, need, and can have from the water supply based on relevant science and law, and then use a water supply operations computer model in planning sessions with the other stakeholder groups to agree upon the operating rules for the system. (Fridays 4:30 – 7:10 pm)

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[1] Note: Undergraduates may enroll in 6XX level courses with special written permission from the Associate Chair or Chair of the CEIE Department. University policy regarding undergraduate enrollment in graduate courses can be found at http://catalog.gmu.edu/content.php?catoid=15&navoid=1168#specialreg