

The Department of Civil, Environmental and Architectural Engineering
At the
University of Kansas
Presents
The Science and Practice of Civil, Environmental and Architectural Engineering

Spring 2009

This series will be presented in the auditorium at Burns & McDonnell, 9400 Ward Parkway, Kansas City, MO. Presentations will be on Mondays from 4 – 6 p.m.

Fourteen topics will be taught by the faculty of the Department of Civil, Environmental and Architectural Engineering and the Department of Engineering Management at the University of Kansas and a special session by Dr. Roger LaBoube of Missouri University of Science and Technology, and will cover current issues in practice. Two hours PDH credit will be given for each session.

February 9 Dr. Roger LaBoube, Curator's Distinguished Teaching Professor from Missouri University of Science and Technology
Cold-Formed Steel Design: 2007 Edition

The 2007 edition of the *North American Specification for the Design of Cold-Formed Steel Structural Members* has numerous enhancements to facilitate the application of cold-formed steel members and connections. Also released in 2007 is a suite of eight standards for cold-formed steel framing that address the design of such members as floor and roof joists, wall studs, headers, trusses, and shear walls. This seminar will provide an overview of these cold-formed steel design documents.

February 16 Dr. Craig Adams, New Chair of CEAE Department, KU
Sustainable Approaches to Control of Pharmaceuticals in Wastewater Treatment Plants

This lecture will address the occurrence, analysis, and fate of pharmaceuticals and endocrine disrupting compounds in municipal and agricultural wastewater treatment. Sustainable treatment and management methods of controlling the release of pharmaceuticals will be discussed, including how control of pharmaceuticals can be achieved concurrently with other objectives such as nutrient removal.

February 23 Dr. Steven Schrock Accommodating Pedestrians at Signalized Intersections

Recent changes in pedestrian walk times as well as the increased use of pedestrian countdown timers has raised the issues of accommodating pedestrians at signalized intersections to the forefront for many traffic signal engineers and pedestrian advocates alike. This presentation will highlight current research and practices related to how pedestrians are accommodated at signalized intersections.

March 2 Dr. Bryan Young
Comparing Regional Flood Frequency Equations and the Rational Method

Application of the Rational Method ($Q = CiA$) is often limited to very small watersheds, such as those encountered in urban stormwater systems. Design discharges for hydraulic structures on larger basins are often obtained using regional flood frequency equations. This talk reviews the background for each of these design methods, and provides a critical evaluation of both using data for 72 watersheds in Kansas. Appropriate values of the Rational C for rural watersheds will be presented.

March 9 Robert Lyon Designing Concrete for Shear

Understanding and making appropriate application of the differing industry approaches to reinforced and prestressed concrete shear design. There are at least four permissible shear design methodologies in the ACI and AASHTO specifications. What lies behind these methods and what is in the future direction of potential code modifications?

March 16 Dr. Tom Glavinich T&D Worksite Shock Protection

The electric power industry has long recognized the need to protect workers aloft and on the ground from dangerous voltages that can occur during construction and maintenance operations on overhead transmissions and distribution (T&D) lines. Current regulations, codes, and standards require the establishment of an equipotential zone where there is the possibility that the worker may be exposed to dangerous voltage at the worksite. However, there is little direction regarding how to establish an equipotential zone to protect linemen, groundmen, and equipment. This seminar will discuss the need to establish an equipotential zone to protect workers on the ground, criteria for creating an effective equipotential zone, and strategies for establishing a safe worksite that includes grounding, isolation, insulation, or a combination of these methods. This seminar is the result of ongoing KU research project entitled *T&D Worksite Shock Protection* that is being sponsored by ELECTRI International and will include the results of staged-fault testing that was carried out at American Electric Power's (AEP) Dolan Technology Center.

**March 23 Dr. Belinda Sturm
The Impact of Sludge Residence Time on the Removal of Synthetic Estrogen in Biological Wastewater Treatment**

The sludge residence time influences both the diversity of the microbial community within a reactor and the reactor's performance. In this talk, the impact of SRTs ranging from 2 to 15 days will be correlated with the removal and chemical transformation of synthetic estrogen EE2 -- a well known endocrine disrupting compound in the environment.

March 30 Dr. Tom Bolin Decision Analysis for Your Toolkit

Decision analysis is a high-potential realm of decision-making support with which engineers and other technical specialists should be familiar. This presentation is intended to: acquaint participants with the field of decision analysis in relation to practical issues of technical decision making; introduce basic software for facilitating application of decision analysis; and engage participants in a progressive series of demonstration decision-making scenarios.

**April 6 Dr. Jie Han
Design of Geosynthetic-Reinforced Earth Walls Under Special Conditions**

Geosynthetic-reinforced earth walls have been successfully used to support highways, bridges, commercial structures, residential buildings, etc. An increased number of such walls have been constructed under special conditions, such as multi-tiered walls, back-to-back walls, limited spaced earth walls, and piles in earth walls subjected to lateral loads. Design of these walls under special conditions is not routine and required special considerations. This lecture will present the latest research results and findings, which can be used for designing such walls.

**April 13 Dr. Brian Rock
Learning from Death and Destruction: Fire Protection Case Studies**

Taxes are due soon, but it could be worse ... much worse. This multimedia seminar presents historic fire events that have influenced engineering design and construction. The early history of fires in America, modern high- and low-rise fires, the World Trade Center events, and other intriguing cases will be presented.

**April 20 Dr. Steve Randtke
Chlorine Chemistry Revisited: Implications for Design and Operation**

Chlorine has been used as a disinfectant in the U.S. for more than 100 years, but its chemistry is very complex. Most practitioners understand chlorine chemistry well enough to design a basic feed system or measure a residual, but many lack the in-depth understanding necessary to avoid or correct problems that can arise in the design and operation of chlorination systems for water and wastewater treatment. This presentation will review key aspects of chlorine chemistry and explain their relevance to the design and operation of chlorination systems. Issues to be addressed include minimizing in-plant chlorine volatilization and "air binding," assessing mixing adequacy, minimizing chlorinous tastes and odors in drinking water supplies, improving the efficiency of wastewater disinfection, minimizing chlorine loss when forming chloramines, interpreting and using oxidation-reduction potentials, recognizing analytical artifacts, and maintaining disinfectant residuals in distribution systems.

