

## **A New Format for Continuing Education- Professional Development Lectures**

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### Abstract

The Civil and Environmental Engineering Department at the University of Kansas has developed a series of lectures for practicing engineers. These have been named the “Professional Development Series.”

The Civil and Environmental Engineering Department at the University of Kansas has conventional undergraduate and graduate programs. The Department offers Bachelors, Masters, and Ph.D. degrees on the main campus of the University of Kansas in Lawrence. The Department also offers a masters level graduate program at the Edwards Campus which is in the Kansas City metropolitan area. In addition to conventional degree programs, the Department offers, on a yearly basis, a series of one-day technical programs that are attended by practicing engineers.

These programs have addressed a long-standing need for continuing education in the engineering community, but in recent years, engineers have requested a different form of continuing education than traditionally had been offered. There is a need for information to be available to all engineers, not just those seeking advanced degrees. The request has been for continuing education material that would be available in a single lecture format, rather than a semester-long format as is required for graduate courses.

In response, the Civil and Environmental Engineering Department at the University of Kansas has developed a series of technical lectures. Each of the lectures is two hours in length and is presented by a different faculty member. The lectures present an overview of various current aspects of civil and environmental engineering. The participants attending the lectures can select and attend only those lectures that are of interest to them. This series of lectures is entitled the “Professional Development Series in Civil and Environmental Engineering.” The series was first presented in the spring semester of 1999. Due to its success, a new series was offered during the spring semester of 2000. In response to the needs of engineers in other disciplines, the 2001 series has been expanded to include topics from other engineering disciplines.

This paper will present details of the Professional Development Series. Items discussed will be the content of the lectures, the benefits to the engineering community and the Civil and Environmental Engineering Department, the manner in which the series was developed, and an assessment as to the success of the series.

## I. Introduction

The Civil and Environmental Engineering Department at the University of Kansas has addressed the continuing education requirements of the engineering community in a variety of ways. The department grants Bachelor degrees, various Masters degrees and Ph.D. degrees on the Lawrence campus and also grants Masters degrees at the evening program located at the Overland Park, Kansas Edwards Campus, in suburban Kansas City. In addition to the degree programs, the department sponsors three, one-day technical conferences each year. The conferences are: 1) the structural engineering conference, 2) the environmental engineering conference, and 3) the asphalt paving conference. The planning of each of these conferences involves the faculty and representatives of local industry. The conferences present invited speakers as well as faculty presentations that address the needs of the respective engineering participants.

The engineering community has, in recent years, requested a different form of continuing education. The degree programs do not address the needs of those who do not desire an advanced degree. The conferences address a different need than the degree programs, but they present a scheduling problem in that it is necessary to miss an entire day of work in order to attend the conference. This can be difficult, in some cases, due to project deadlines, etc. In an attempt to address the need for additional continuing education for the engineering community, the Civil and Environmental Engineering department has introduced a series of Professional Development Lectures.

## II. Civil and Environmental Engineering Faculty

The Civil and Environmental Engineering faculty consists of twenty-five members with a wide range of expertise. The main groups in the department are structural, mechanics, environmental, geotechnical, transportation, construction, and water resources. In addition to these groups individual faculty members have specialization areas. These areas include, but are not limited to composite and concrete materials, artificial computer intelligence, and high-temperature pipe stress analysis. This range of knowledge makes the concept of the professional lectures attractive because a wide variety of topics can be addressed in the presentations. Several faculty members also have consulting and industrial experience, allowing them to understand the needs of practicing engineers.

## III. Market for Professional Development Lectures

The University of Kansas is located near both Kansas City, Missouri and Topeka, Kansas. Kansas City is the home of a number of large consulting firms, among these are Burns and McDonnell Engineering Company, HNTB Corporation, and Black and Veatch. There are also a large number of smaller consulting firms in both Topeka and Kansas City. Kansas City represents a center with one of the highest per capita populations of civil engineers in the United States. In addition to the consulting firms, both the Kansas and Missouri Departments of Transportation have offices in the Kansas City and Topeka areas. This concentration provides an excellent pool of engineers and, therefore, makes the concept of the professional development lectures attractive to the Civil and Environmental Engineering Department and to the engineering community.

#### IV. Creation of the Professional Development Lectures

Once the need for a new form of continuing education was recognized, representatives of the Civil and Environmental Engineering Department and representatives of the local engineering firms met and identified specific topics that would be of value to local engineers. These discussions also led to the lecture format. Each lecture was two hours in length and was given on Monday afternoons from 4:00 PM to 6:00 PM. A total of twelve lectures were planned and given over the period beginning January 25, 1999, and ending April 19, 1999. Burns and McDonnell Engineering Company of Kansas City, Missouri provided an auditorium for the lectures in their international headquarters building.

Complete sets of lecture tickets were sold to companies who wanted their employees to attend. The cost for each two-hour lecture was \$40.00. The format allowed employees to select only those lectures useful to them. Tickets for individual lectures were also available. Several companies bought tickets for the entire series and distributed them to different individuals in their company according to the interest of the employee. Thus a company could buy a group ticket and have a number of people attend and benefit from the lectures.

The concept of the lectures was developed late in the year 1998. It did not allow time to advertise. In an effort to overcome this timing limitation, a number of retired alumni from the department Advisory Committee volunteered to contact several companies in the area and inform them of the plans for the lecture series and to encourage the companies to buy a group of tickets for their employees. The companies then, in turn, distributed the tickets to individuals who would most benefit from the material in each lecture.

The following lectures were presented during the first series in the spring of 1999.

January 25, 1999	Material Properties as Related to the Behavior of Structural Steel Details
February 1, 1999	Intelligent Transportation Systems
February 8, 1999	High-Temperature Pipe Stress Analysis
February 15, 1999	Upcoming Changes In the ACI 318 Building Code for 1999.

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February 22, 1999	High-Strength Concrete
March 1, 1999	GIS for Geotechnical Engineering Applications
March 8, 1999	Water Treatment Plant Design and Operation to Meet the Enhanced Coagulation and Softening Requirements of the Stage-1 D/DBP Rule.
March 15, 1999	Improving the Effectiveness of Bioremediation Processes Through Better Biology
March 29, 1999	Composites for Structural Applications
April 5, 1999	An Overview of Floodplain Analysis
April 12, 1999	Performance Based Design for Earthquake Resistant Structures in Regions of Moderate Seismicity
April 19, 1999	Current Problems in Air Pollution

#### V. Evaluation of 1999 series

The lectures were judged by the participants to be a success. An evaluation form was circulated after each lecture. The attendees evaluated the presentation and also the significance of the material in each lecture. The total number of attendees for all twelve lectures was 817. The maximum attendance (126) was on the February 22, 1999 at the high-strength concrete lecture and the smallest attendance (17) was on the March 8 lecture at the Water Treatment Plant Design lecture. The attendance did not appear to depend on the quality of the lecture, but rather on the number of people working in the area that the lecture addressed.

The Professional Development Series has proven to be a win-win situation for both the Civil and Environmental Engineering Department and the engineering companies and their employees. Several attending the lectures have since enrolled in evening Masters degree courses that are offered at the University of Kansas Edwards campus. The Department also earned needed revenue that was shared, in part, with those faculty members presenting the lectures. A part-time secretary was hired with the revenue that benefited the entire Department. The companies benefited because they had current state-of-the-art information presented to their employees. The engineers benefited by learning new information and they also received 2 professional development hours (PDH) for each lecture attended. The PDH hours can be used to keep their professional license registration current.

#### VII Spring 2000 Professional Development lectures.

A second series of lectures was presented during the spring 2000 semester. As in the first series, the presentations were planned to respond to the needs of the engineering community. A new set of topics was selected and, for the most part, a different group of faculty presented the lectures. By using different faculty, the workload was distributed and a broader exposure of the faculty was presented to the engineering community. The attendance increased as was anticipated because a larger number of companies participated and the plans were made further in advance, thus allowing time for potential participants to learn of the lectures.

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The lectures presented during the spring 2000 series are listed below.

January 31, 2000	Fatigue Design of Steel Structures
February 7, 2000	Design of Reinforced Concrete Members for shear
February 14, 2000	Understanding Superpave
February 21, 2000	Web Based Project Management
February 28, 2000	Experimental Design, Hypothesis, Testing, Univariate/Multivariate Methods
March 6, 2000	Application of Vibration Isolation
March 13, 2000	Fastening to Concrete
March 27, 2000	Design Highways for Safety
April 3, 2000	Hydrologic Modeling for Flood Studies
April 10, 2000	Taste and Odor Control in Public Water Supplies
April 17, 2000	Wetland Permitting
April 24, 2000	Bioremediation Design Fundamentals

#### VIII Evaluation of the Spring 2000 series

The attendance of the 2000 series, as anticipated, increased over the 1999 series attendance. The average attendance was 96 per lecture with a total attendance of 1156 for the series. As in the first year of the series, there was a wide range of attendance depending on the lecture topic. The high attendance was 169 for the lecture on “Fastening to Concrete” and the low attendance was 39 on the lecture on “Taste and Odor Control in Public Water Supplies”.

#### IX. Spring 2001 Professional Development lectures.

A new set of lectures has been planned for the spring of 2001. In order to appeal to a larger group of engineers, the scope of the topics has been broadened to include lectures beyond traditional civil engineering topics. Lectures on engineering ethics, global positioning, web management, and construction management will be presented.

The lectures planned for the spring 2001 series are listed below.

January 22, 2001	Frame Stability – Practical Issues for Engineers
January 29, 2001	GIS Applications in Civil Engineering
February 5, 2001	GIS:Basic Tools for Hydrologic Analysis
February 12, 2001	Web Based Project Management- One Viewpoint
February 19, 2001	Professional Ethics
February 26, 2001	Construction Claims Analysis
March 5, 2001	Air Pollution and the Transportation Industry
March 12, 2001	Wetlands and Mitigation Banking
March 26, 2001	Web Based Project Management- Another Viewpoint

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April 2, 2001  
April 9, 2001  
April 16, 2001

GIS Applications in Flood Plain Analysis  
Risk Assessment and Management  
Concrete Durability

#### X Summary

The Professional Development Series provides a new means of providing continuing education to practicing engineers in the greater Kansas City - Topeka area. It provides a transfer of current state of the art information to the engineers thus allowing them to remain current in their professional development. The lecture series also provides the opportunity for the department to attract qualified candidates to the masters degree programs on both the Lawrence and Edwards campus programs. The series has proven to be good for the practicing engineers, the department and the faculty.

The 2001 series opens up the topics to attract not only civil engineers but engineers from other disciplines and other technical professionals. It is anticipated that the expanded format will prove to increase the success of the series which has already been judged a success in previous years.

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Francis Thomas is the John and Winfred Sharp Distinguished Professor of Civil and Environmental Engineering at the University of Kansas. He earned a Ph.D. in Theoretical and Applied Mechanics from the University of Illinois. He has taught undergraduate and courses in Engineering Mechanics and has served as a consultant to industry with a specialization in structural dynamic analysis and high temperature piping stress analysis.

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Steven L. McCabe is professor and Chair of the Civil and Environmental Engineering Department at the University of Kansas. He earned a Ph.D. from the University of Illinois in Civil Engineering. He teaches undergraduate and graduate courses in structural design and analysis. He is actively involved in research in concrete bond behavior and seismic design.