

## **Continuing Education Using Professional Development Lectures**

**Francis M. Thomas, Steven L. McCabe  
University of Kansas**

### 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 graduate courses on the Edwards Campus in Overland Park, Kansas, which is in the Kansas City metropolitan area, leading to various masters degrees in Civil and Environmental Engineering. 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 help to them. This series of lectures is entitled the “Professional Development Series in Civil and Environmental Engineering.”

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 is a schedule of the lectures presented during the spring of 1999.

**The Science and Practice of Civil Engineering  
Spring 1999  
Professional Development Series**

**TOPICS**

January 25, 1999	Stan Rolfe - Material Properties as Related to the Behavior of Structural Steel Details
February 1, 1999	Eric Meyer - Intelligent Transportation Systems
February 8, 1999	Francis Thomas - High-Temperature Pipe Stress Analysis
February 15, 1999	Steve McCabe - Upcoming Changes In the ACI 318 Building Code for 1999.
February 22, 1999	Dave Darwin – High-Strength Concrete
March 1, 1999	Bob Parsons - GIS for Geotechnical Engineering Applications

March 8, 1999	Steve Randtke - Water Treatment Plant Design and Operation to Meet the Enhanced Coagulation and Softening Requirements of the Stage-1 D/DBP Rule.
March 15, 1999	David Graham - Improving the Effectiveness of Bioremediation Processes Through Better Biology
March 22, 1999	No Session - Spring Break
March 29, 1999	Guillermo Ramirez - Composites for Structural Applications
April 5, 1999	David Parr - An Overview of Floodplain Analysis
April 12, 1999	JoAnn Browning - Performance Based Design for Earthquake Resistant Structures in Regions of Moderate Seismicity
April 19, 1999	Dennis Lane - 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 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 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. Prospects for the year 2000 lectures.

Another series of lectures has been planned for the spring of 2000. Again, this was done in conjunction with the needs of the engineering community. A different set of topics has been selected and, for the most part, a different group of faculty will be presenting the lectures. By using different faculty, the workload is distributed and a broader exposure of the faculty is given to the engineering community. Increased attendance this year is expected because a larger number of companies are participating and the plans have been made further in advance, thus allowing time for potential participants to learn of the lectures.

The lectures planned for the spring 2000 series are listed below.

**The Science and Practice of Civil Engineering  
Spring 2000  
Professional Development Series**

	<b>TOPICS</b>	<b>PRESENTERS</b>
January 31, 2000	Fatigue Design of Steel Structures	Stan Rolfe
February 7, 2000	Design of Reinforced Concrete Members for Shear	Adolfo Matamoros
February 14, 2000	Understanding Superpave	Steve Cross
February 21, 2000	Web Based Project Management	Eric Hiebert
February 28, 2000	Experimental Design, Hypothesis, Testing, Univariate/Multivariate Methods	Glen Marotz
March 6, 2000	Application of Vibration Isolation	Tod Sutton
March 13, 2000	Fastening to Concrete	Steve McCabe
March 20, 2000	SPRING BREAK - NO SESSION	
March 27, 2000	Design Highways for Safety	Joe Lee
April 3, 2000	Hydrologic Modeling for Flood Studies	Bruce McEnroe
April 10, 2000	Taste and Odor Control in Public Water Supplies	Steve Randtke
April 17, 2000	Wetland Permitting	Ernie Pogge
April 24, 2000	Bioremediation Design Fundamentals	Tat Ebihara

**FRANCIS M. THOMAS**

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 stress analysis.

**STEVEN L. McCABE**

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.