

# Spring 2005 ETCS Colloquium Series

Wednesday, January 26, 2005  
12:00 – 1:15 PM  
KT 146

**ALL FACULTY, STAFF, STUDENTS AND COMMUNITY INDIVIDUALS ARE INVITED.**

## Experiments in the Classroom: Toys, Techniques and Teaching

By



**DR. S. SCOTT MOOR**

### Abstract

In the field of engineering education, the literature is full of effective alternatives and supplements to the traditional lecture. These alternatives include cooperative learning (where students learn from each other), inductive learning (where particular examples are presented first and then connected to general principles) and the use of hands-on learning in the classroom. However, our resources and facilities are most well adapted to the traditional lecture model. This makes it difficult and time consuming to implement these alternatives.

Laboratory experiments are clearly an excellent place to encourage these alternative approaches to education. However, we generally have a literal wall between the lecture room and the laboratory. It is beneficial to mix laboratory material with classroom presentations and problem solving in a more flexible approach than a traditional separate laboratory and lecture allows.

Over the last several years, I have been involved in the development of a range of resources to help implement and understand these alternative approaches to lecturing in engineering education. A key focus of this effort has been taking down the wall between the laboratory and the classroom by developing classroom friendly experiments and by developing facilities that combine the strengths of both a classroom and a laboratory.

I have developed laboratory kits, which are designed for this combined lecture/laboratory approach. This effort includes experiments for teaching simple RLC circuits using Snap Circuits®, a children's toy that allows circuits to be snapped together, and a kit based on the Lego® RCX® brick for teaching control systems.

In this presentation we will review some of the background on these teaching approaches, give an overview and demonstration of some of the resources that I have developed, present possibilities for a special classroom/laboratory facility here at IPFW and review some future opportunities.

### Biography

S. Scott Moor received a B.S. and M.S. in Chemical Engineering from M.I.T. After a decade in industry, he returned to academic at the University of California at Berkeley where he received a Ph.D. in Chemical Engineering and an M.A. in Statistics. He is a registered Professional Chemical Engineer in the State of California. He is currently Assistant Professor of Engineering and Coordinator of the Freshman Engineering Program at Indiana University Purdue University – Fort Wayne. For nine years, he has taught in the engineering program at Lafayette College in Easton, PA where he received the 2002-2003 student government superior teaching award for Natural Sciences and Engineering. He has been active in engineering education scholarship including the adaptation of toys for use as tools in engineering education. He was co-recipient of the 2004 Martin Award from the Chemical Engineering Division of the American Society for Engineering Education (ASEE) for the outstanding paper presented at ASEE's annual meeting.

**Pizza and drinks will be furnished, compliments of Dean Voland.**

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