

**Friday, Jan 25, 2008**  
**12:40 PM – 1:30 PM**  
**Room 126**  
**Engineering & Architecture Building**

**All are invited to attend**  
**Pizza will be served**

### **Civil Engineering Seminar Series**

## **Advanced Structural Health Monitoring for Bridge Infrastructure Diagnostics**

**Daniel N. Farhey, Ph.D.**  
**Assistant Professor**  
**Civil and Environmental Engineering & Engineering Mechanics**  
**University of Dayton**

According to the U.S. National Bridge Inventory, from the total count of 597,443 bridges, 12.35% (73,800) are rated structurally deficient. Bridges are considered structurally deficient if they are restricted to light vehicles, require immediate rehabilitation to remain open, or are closed. Structurally deficient bridges have significant deterioration in one or more structural components and may be posted to restrict commercial traffic load limits or even decommissioned. These bridges require immediate intervention. However, any decision of action requires thorough diagnostics.

Current instrumentation, data acquisition, control, and monitoring for diagnostics uses expensive and complex laboratory benchtop technology that is based on numerous sets of rack-mount bulky equipment. Also, most current instrumentation systems are still hard wired and require the preliminary establishment of an extensive cable network on and around the structure. In addition to the time consuming, labor intensive, and expensive logistics, the imposed traffic delays increase the intensity of the economic impact on the public beyond the cost of instrumentation.

The Wireless Instrumentation for Structural Evaluation (WISE) System eliminates both the equipment sets and cable networking. A virtual instrumentation software package enables computer-control of all system components through a user-friendly graphical user interface. Also, a multiple-channel wireless site network throughout the structure controls the communication. Field tests verified the proper operation of the integrated modular

**For more information contact:**  
**ceed@temple.edu, (215) 204-7814**