



2012

### FAZLUR RAHMAN KHAN DISTINGUISHED LECTURE SERIES

*Honoring a legacy in structural engineering and architecture*

Presentations will be held in the Sinclair  
Laboratory Auditorium at Lehigh University

Receptions to precede events starting at 4:10 P.M.

<http://www.lehigh.edu/~infrk>

Friday, February 17th, 2012

4:30 P.M.

“Natural Hazard Risk: Public Perceptions  
& Political Perversities”

Friday, March 23, 2012

4:30 P.M.

“Opportunities and Challenges for  
Infrastructure Monitoring”

Friday, April 20, 2012

4:30 P.M.

“The Safety of Bridges”

#### ABOUT THE KHAN SERIES

In step with the abounding vitality of the time, structural engineer **Fazlur Rahman Khan** (1929-1982) ushered in a renaissance in skyscraper construction during the second half of the 20th century ([www.fazlurrkhan.com](http://www.fazlurrkhan.com)). Fazlur Khan was a pragmatic visionary: the series of progressive ideas that he brought forth for efficient high-rise construction in the 1960s and '70s were validated in his own work, notably his efficient designs for Chicago's 100-story John Hancock Center and 110-story Sears Tower -- the tallest building in the United States since its completion in 1974.



Fazlur  
Rahman  
Khan

Lehigh endowed a chair in structural engineering and architecture and has established this lecture series in Khan's honor. It is organized by **Professor Dan M. Frangopol**, the university's first holder of the Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture, and sponsored by the Departments of Civil & Environmental Engineering, and Art & Architecture.



*Ross B. Corotis*  
Denver Business Challenge  
Professor of Engineering,  
University of Colorado at Boulder

#### NATURAL HAZARD RISK: PUBLIC PERCEPTIONS & POLITICAL PERVERSITIES

Probabilistic analysis and engineering modeling clearly demonstrates the positive payback associated with structural design incorporating robustness against natural hazards. This is clear for new construction, but also for retrofit in many situations. Yet throughout the world, including in the United States, policy makers continue to undervalue considerations of natural hazards in their long-term planning, both at the community level and the individual structural level. This shortcoming lies with the engineers and risk professionals; not in their analyses and capabilities, but in their unwillingness to incorporate public perceptions of risk and political process rationality, and thence in their inability to communicate and convince decision makers to spend limited, precious funds now so as to perhaps avoid costly expenses at some far off, undetermined time in the future. The lecture will address strategies that are appropriate to address this natural dichotomy.



*Sharon L. Wood*  
Robert L. Parker, Sr.  
Professor in Engineering  
and Chair, Department of  
Civil, Architectural, and  
Environmental Engineering,  
University of Texas at Austin

#### OPPORTUNITIES AND CHALLENGES FOR INFRASTRUCTURE MONITORING

Technical advances over the past decade have led to the development of comprehensive, structural-health monitoring systems. Yet visual inspection is still used as the primary method for evaluating the condition of infrastructure systems in the United States. Examples of using measured bridge response to augment visual inspections will be presented, along with the challenges of implementing these technologies.



*Ted V. Galambos*  
Professor Emeritus, Structural  
Engineering, University of  
Minnesota, Minneapolis

#### THE SAFETY OF BRIDGES

This presentation will focus on the general causes of bridge failures and on how they can be prevented. Most accidents happen during construction, but less frequently collapses also occurred after many years of service. The most terrible events are when a bridge after many years suddenly disintegrates. Examples of both construction and long service failures will be presented. Examples of construction failures to be considered are the Quebec Bridge in Canada and the Yarra River Crossing in Australia. The Firth of Tay Bridge in Scotland, the Point Pleasant Bridge over the Ohio River, and the Minneapolis Bridge disasters will illustrate events on bridges that were in service. Similarities and differences of these sudden failures will be discussed. Lessons learned and recommendations for preventive actions will then be presented. The main conclusion of the talk will be that the seeds of destruction were sowed already at the initial planning stages of design. Sudden and complete bridge failures are very rare events, fortunately, and the engineering profession has the means to make the probability of failure even smaller.

*This lecture series is sponsored by:*

Civil & Environmental Engineering: College of Engineering & Applied Science  
Art & Architecture: College of Arts & Sciences