For more information: 202-994-6749
Hosts: Professors David Chichka (Chichka@gwu.edu) & James Lee (jdlee@gwu.edu)

MAE/CEE SEMINAR SERIES

Analytical Formulation for Intelligent Infrastructure Design and Operation by the *LiveDesign* Paradigm

Gautam Dasgupta, Professor Civil Engineering & Engineering Mechanics
Columbia University, New York, NY

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3pm

Abstract
LiveDesign is a digital computing environment combines all available information to produce an up-to-date characterization of a complex system in order to optimally aid crises mitigators. Numerical engineering responses are traditionally expressed in terms of probability indices. The *LiveDesign* computational engine transforms (text-based) policy statements, bodies of laws, and all such qualitative information via fuzzy logic constructs into probability measures with (interval arithmetic) tolerances. A critical combination (correlation analysis) yields (extreme value statistics-based) warning alarms. The current risk factors are continuously updated (according to Bayesian methods) and fine tuned by incorporating the lessons from observations and predictions. *LiveDesign* is a high accuracy intelligent environment that accounts for important second (and higher) order causes which are overlooked by conventional reliability based (mean value driven) computational schemes.
(http://www.columbia.edu/~gd18/LiveDesign/)

The Speaker
Gautam Dasgupta received his BE in Civil Engineering (1967) and ME in Applied Mechanics (1969) from Calcutta University, India and PhD in Structural Mechanics (1974) from University of California, Berkeley. After three years of post doctoral research in Berkeley, on soil-structure interactions, he joined Columbia University.

He was awarded a Humboldt Fellowship in 1987 and a Fulbright Senior Professorship in 1998. (http://www.columbia.edu/~gd18/AcademicRecords.html) Research Areas: Continuum and Computational Mechanics, Computer Mathematics; Problems of Interest: Wave propagation in Random Media, High Accuracy Finite/Boundary Elements; Illposed boundary value problems; Morphometric Analysis of Biological Growth. Publications: Journal: 15 (single author), 20 (joint authorship); Proceedings: exceeds 50; Committees: Held Chairmanship in ASCE Elasticity and Bioengineering Committees; Chair International *Mathematica* Symposium (1994 to 2002).