

*Department of Mathematical and Computer Sciences  
and  
Center for Robotics, Automation and  
Distributed Systems (CARDI)*

sponsored by the  
ACM Distinguished Lectureship Program

**Tradeoffs Between Model Abstraction, Execution  
Speed, and Accuracy in Simulation Models**

**David Nicol**

Department of Electrical and Computer Engineering  
University of Illinois, Urbana-Champaign

Friday, March 2, 2007  
Alderson Hall, Room 330, 3:00 pm

**Abstract:** The activity of modeling necessarily means developing abstractions; in doing so some information about the system of interest is lost. There is an art to abstraction---finding one that captures the essential system behavior while remaining computationally tractable, and a science---making quantitative linkages between models of high resolution and models of low resolution.

This talk uses simple examples to illustrate these points, proposes some common principles to observe when modeling, and discusses applications of these principles to problems in modeling communication network traffic.

**BIO:** David M. Nicol received a B.A. in mathematics from Carleton College (1979), and the M.S. (1983) and Ph.D (1985) in computer science from the University of Virginia. He has served on the faculty of the College of William and Mary (1987-1996), Dartmouth College (1996-2003), and the University of Illinois, Urbana-Champaign (2003-present).

He has an extensive history of research contributions in high performance computing, performance analysis, and simulation modeling and methodology. In recent years his research has extended to quantitative assessment of system security.

He has served as program chair and also general chair of the Workshop on Parallel and Distributed Simulation, is the 2006 general chair of the Winter Simulation Conference, and was Editor-in-Chief of ACM Transactions on Modeling and Computer Simulation from 1996-2003. He is a Fellow of the ACM and a Fellow of the IEEE.