

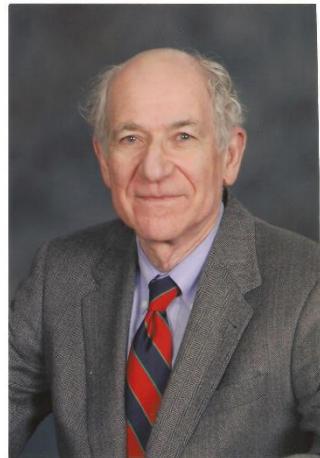
# SCS Keynote Speaker



**TITLE:** Simulation, Teaching and Learning

**AUTHOR:** Prof. Dr. Ronald C. Rosenberg

**DATE/TIME:** Wed. July 9, 8:30am in Regency 1-3



## ABSTRACT:

This plenary presentation will explore several aspects of simulation technology and its development as of now and what to expect in the future. An exploration of the opportunities combining the concepts on how we learn with digital technology will be presented. We need to consider the learner, our tried and true teaching technologies, our tried and true practice and our tried and true delivery combined with practice and digital technology.

The presentation will discuss the economics of the practice cycle and how effective feedback is a key to learning, economics of practical simulation problems. What is the bond graph method?

A historical perspective of its development and practical application will be presented. Do engineers think as mathematicians? The answer is the key to the teaching and learning the simulation process. What does the future hold? We need to explore how interactive problem pools can be built and made available cost-effectively. What level of feedback capability would be useful? A sound approach to providing effective feedback digitally should allow for incremental growth of answer-processing intelligence. Digital tools make the capability available globally.

## SHORT BIO:

Professor Ronald C. Rosenberg is the Associate Dean for Special Initiatives, Engineering Associate Director of the Applied Engineering Sciences Program following a successful career as a distinguished Professor of Mechanical Engineering at Michigan State University.

Prof. Rosenberg earned his Ph.D. degree in Mechanical Engineering in 1965 from the Massachusetts Institute of Technology. He also studied his undergraduate B.S and M.S. at MIT. He was a student of Prof. Henry Paynter, the inventor of the Bond Graph Technology. He worked on the transformation of the theory behind Bond Graphs and their relation to physical reality to a practical method for Computer Modeling and Simulation.

The results of his years of research in software development and teaching are summarized in several books and numerous research publications such as *Analysis and Simulation of Multiport Systems*, D.C.Karnopp and R.C.Rosenberg, MIT Press, 1968, *A User's Guide to ENPORT-4*, R.C.Rosenberg, Wiley-Interscience, 1974, *Introduction to Physical System Dynamics*, R.C.Rosenberg and D.C.Karnopp, McGraw-Hill, 1983, *SYSKIT: Software Toolkit for Linear Systems*, R.C.Rosenberg and E.D. Goodman, McGraw-Hill, 1985, *System Dynamics: A Unified Approach*, D.C.Karnopp, D.L.Margolis, and R.C.Rosenberg, Wiley-Interscience, 2012 (5th edition).

Prof. Rosenberg is well known in scientific circles as a member of the American Association for the Advancement of Science, American Society for Engineering Education, American Society of Mechanical Engineers, Institute of Electrical and Electronics Engineers