

RISK ASSESSMENT FOR THE EVOLUTION OF FUTURE COMPLEX AND INTERCONNECTED PHYSICAL, ECONOMIC, AND SOCIAL SYSTEMS

Enrico Zio, Ph.D.

Ecole CentraleSupélec, France
Politecnico di Milano, Italy



MONDAY, JANUARY 29

6:30 PM – 7:30 PM

Farzaneh Hall, Room 148

With consideration to the changing industrial, environmental, and social aspect of today's systems, this talk will address some challenges and opportunities therein, focusing on aspects of risk. Digitalization brings improvements, but with them comes also the complexity of cyber-physical-social systems. Climate change and extreme natural events are increasingly threatening our infrastructures. Terrorist and malevolent threats are posing severe concerns. Risk assessment must evolve for addressing these challenges. Development directions are presented, including the use of simulation for accident scenario identification and exploration, the extension of risk assessment into the framework of resilience and business continuity, and the reliance on data for dynamic and condition monitoring-based risk assessment.

Enrico Zio is currently Director of the Chair on Systems Science and the Energetic Challenge of the Foundation Electricite' de France (EDF) at CentraleSupélec, Paris, France, full professor and President of the Alumni Association at Politecnico di Milano, visiting professor at MIT, distinguished guest professor at Tsinghua University (China), adjunct professor at University of Stavanger (Norway), City University of Hong Kong, Beihang University (China), and Wuhan University (China). His research focuses on (i) the modeling of the failure-repair-maintenance behavior of components and complex systems, (ii) the analysis of their reliability, maintainability, prognostics, safety, vulnerability, resilience, and security characteristics, and (iii) the development and use of Monte Carlo simulation methods, artificial techniques, and optimization heuristics. He is author/co-author of seven books and more than 300 papers in international journals, Chairman and Co-Chairman of several international conferences, and associate editor of several international journals. He received the M.Sc. degree in nuclear engineering from Politecnico di Milano in 1991 and in mechanical engineering from UCLA in 1995, and the Ph.D. degree in nuclear engineering from Politecnico di Milano and MIT in 1996 and 1998, respectively.

Analytics of Resilient Cyber-Physical-Social Networks

Lectures accompanying ISE 4970/5970 are supported primarily by the Presidential Dream Course program. These lectures are free and open to the public. For accommodations on the basis of disability, please contact the OU School of Industrial and Systems Engineering at ccarney@ou.edu.

