DATA-DRIVEN MODELING UNDER UNCERTAINTY: ACHIEVING A SUSTAINABLE RESILIENCE FOR CRITICAL INFRASTRUCTURES AND COMMUNITIES

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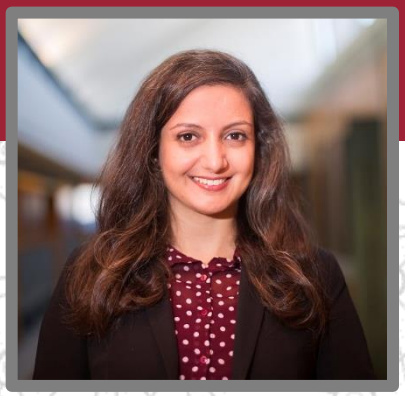

MONDAY, APRIL 2

6:30 PM – 7:30 PM
Farzaneh Hall, Room 148

The protection of critical infrastructures and communities has recently garnered attention with an emphasis on analyzing the risk, improving the resilience, and planning for the sustainability of such networks. Critical infrastructures constitute a wide range of interdependent systems such as transportation, communications, water, and energy, among others. These systems are essential to our economy and society, however, they frequently face disruptive events resulting from natural hazards, accidents, or man-made attacks, leading to cascading failures across other infrastructures and the communities that rely on them. In addition, infrastructure systems are expected to reduce impact on human health and the environment while meeting the current demand without compromising the ability of future generations to meet their own needs. As a result, infrastructure resource allocation should address the short-term goals of resilience to disruptions and consider long-term planning for sustainability. Challenges exist in developing the necessary methodologies that (i) bridge between data and decisions, (ii) account for uncertainty, and (iii) incorporate social aspects. This talk will provide examples of such methodologies including predictive analytics, network modeling, and decision analysis. Case studies to illustrate these methods will range from urban and smart cities to rural and developing communities.

Hiba Baroud is an assistant professor in the Department of Civil and Environmental Engineering and the Littlejohn Dean's Faculty Fellow. Her work explores data analytics to measure and analyze the risk, reliability, and resilience in critical infrastructure systems. Hiba holds a Ph.D. in Industrial and Systems Engineering from the University of Oklahoma, a Master of Mathematics from the Department of Statistics and Actuarial Science at the University of Waterloo, and a B.S. in Actuarial Science from Notre Dame University, Lebanon. Her prior experience includes a summer research with IBM at the Watson Research Center, a fellowship at the George Washington University Center for International Business Education and Research, and a visiting position in the Department of Geography and Environmental Engineering at Johns Hopkins University. Hiba is part of the Infrastructure Resilience Division in the American Society of Civil Engineers, the Engineering Specialty Group of the Society for Risk Analysis, and the World Association for Waterborne Transport Infrastructure.

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.

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