

# EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

## Autonomous Vehicles & Connected Systems: Shared Fleet Mobility Models & Flow Implications

**ABSTRACT** – This presentation consists of two parts. In the first part, we discuss market adoption of autonomous vehicles, introduce a taxonomy of emerging models of shared autonomous fleet management, and discuss how these connect to known dynamic vehicle routing problems. In the second part, the traffic flow implications of different adoption rates are examined using a microscopic modeling framework of mixed traffic streams in which certain fractions of the vehicles are respectively autonomous, connected or both. We jointly model the properties of the peer-to-peer communication systems for different levels of message content. The framework is used in an exploratory analysis of the flow characteristics of the resulting mixed traffic stream, with particular attention to throughput and stability.



**Dr. Hani Mahmassani**

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**SPEAKER BIO** – Dr. Hani Mahmassani holds the William A. Patterson Distinguished Chair in Transportation at Northwestern University, where he is the Director of the Northwestern University Transportation Center. He has over 30 years of professional, academic and research experience in the areas of intelligent transportation systems, freight and logistics systems, multimodal systems modeling and optimization, pedestrian and crowd dynamics and management, traffic science, demand forecasting and travel behavior, and real-time operation of transportation and distribution systems. He has served as principal investigator on over 145 funded research projects sponsored by international, national, state, and metropolitan agencies and private industry. He is past editor-in-chief and current associate editor of *Transportation Science*, senior editor of *IEEE Transactions on Intelligent Transportation Systems*, and founding associate editor of *Transportation Research C: Emerging Technologies*. He has served in an advisory capacity to various institutes and programs, and has performed several program assessments of leading international research institutes and corporate R&D departments. He is emeritus member of Transportation Research Board committees on travel behavior analysis, telecommunications and travel behavior, and network modeling. Mahmassani received his PhD from the Massachusetts Institute of Technology in transportation systems and his MS in transportation engineering from Purdue University.

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**TUESDAY, NOVEMBER 8, 2016**

**3:30PM – 4:50PM**

USC RONALD TUTOR HALL (RTH), ROOM 211