Abstract: There is a long history of applying operations research techniques to problems in airline and air transportation system planning and operations. Over time, these techniques have become more sophisticated, with models and algorithms enhanced to account for multiple sources of uncertainty, competitive effects, passenger choice, and dynamic decision making, to name a few. The impacts have been significant, as demonstrated through numerous applications to air transportation problems across the globe. In this talk, I will briefly review this history, provide examples that illustrate the evolution of modeling and solution approaches, quantify some of the impacts, and highlight research opportunities in the field.

Bio: Cynthia Barnhart is MIT’s Chancellor and the Ford Foundation Professor of Engineering. At MIT, she previously served as Associate and Acting Dean for the School of Engineering and co-directed the Operations Research Center and the Center for Transportation and Logistics. Her research focuses on building mathematical programming models and large-scale optimization approaches for transportation and logistics systems. Barnhart is a member of the National Academy of Engineering and the American Academy of Arts and Sciences, and has served as the President of the Institute for Operations Research and the Management Sciences and in editorial roles for the flagship journals in her discipline.

Throughout the academic year, the Department of Civil and Environmental Engineering invites renowned leaders from academia and industry to speak at Northeastern University. Each semester, the college highlights one speaker through the College of Engineering Distinguished Seminar.

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