

## Istanbul Technical University

### M.Sc. Program in Air Transportation Management

#### Course Description: Airport Planning and Management

January 23-28, 2017

#### Course Intent

Airports provide the major infrastructure used in the provision of commercial airline services. The facilities at an airport determine what types of aircraft an airline can operate. Airports are usually the largest single pieces of real estate in their urban region and they have many impacts on their communities. They also often require huge investments of funds and resources. Thus airport planning is important not only for the airport, but also for their airline customers and the communities they serve. While in the past, airports were thought of as government public utilities, today all airports are operated as businesses, with an increasing number of these businesses being private sector companies. This course is intended to give aviation managers an understanding of key aspects of airport planning and of how airports are operated and managed as economic entities.

#### Course Instructors:

- **Richard de Neufville**

Dr. de Neufville is Professor of Systems Engineering at MIT. He wrote the textbooks *Airport Systems: Planning, Design, and Management* (with Prof. Odoni) and *Flexibility in Engineering Systems* (MIT Press) as well as 4 others in Systems Planning and Design. He founded and led the development of the MIT Technology and Policy Program, which has been replicated at the University of Cambridge and the Delft University of Technology. He has consulted on landside issues with airports “on every inhabited continent”. He is a founding member of the MIT team collaborating on the development of the Singapore University of Technology and Design. He has received many international awards for research and teaching, including the McKelvey Award for Aviation, and the FAA award for Excellence in Aviation Education (with Prof. Odoni).

- **Amedeo Odoni**

Dr. Odoni is the T. Wilson Chair Professor Emeritus of Aeronautics and Astronautics and of Civil and Environmental Engineering at MIT. He has served as Co-Director of the Global Airline Industry Center at MIT (1999-2009) and the FAA’s National Center of Excellence in Aviation Operations Research (1996-2002). He has more than 100 professional publications to his credit and is co-author or co-editor of 9 books, including the best-selling textbooks *Airport Systems: Planning, Design, and Management* (co-authored with R. de Neufville) and *The Global Airline Industry* (co-edited with P. Belobaba and C. Barnhart). Dr. Odoni is an elected member of the U.S. National Academy of Engineering, a Fellow of INFORMS, and the recipient of several awards for his teaching and research. He has served as consultant to many of the busiest airports in the world.

- **Joe Sulmona**

Dr. Joe Sulmona is a senior professional with considerable experience with innovative private and public transportation strategy and infrastructure projects. He commenced his aviation career as a commercial-instrument pilot. In subsequent years, he developed a proven track-record in leading multi-disciplinary teams in areas of strategic planning, capital and land-use planning, public administration, policy advocacy, project management, stakeholder consultation, commercial development, management training and community service. Some notable achievements include Dr. Sulmona's leading globally significant airport development projects, including for the award-winning Vancouver International Airport (YVR). Most recently, Dr. Sulmona has provided strategic advisory support for development of Master Plans for both London Heathrow and London Gatwick, together with delivering the Master Plan for a proposed airport near Rome, Italy. In the MENA region, Dr. Sulmona currently advises various transportation strategic initiatives with engagements in Dubai, Abu Dhabi, Doha, Cairo, Khartoum, Amman, Istanbul, and Tehran, together with supporting projects in Oman, Iraq, Kuwait, Algeria, Tunisia, and Saudi Arabia. He also leads strategic management training efforts for both IATA and Airport Council International (ACI), is a guest lecturer for various academic institutions and also has an active role in transportation research with a specialty in the relationship between Advanced Border Controls and network planning.

## Course Format

- This course is taught over 6 consecutive days, each with 6 hours of classes. Modules will have 15-minute breaks.
- Course language  
English.
- Teaching level
  - This course is a course in a masters' degree program
  - Students are assumed to have basic knowledge of the aviation industry and most have work experience with an airline, airport or other aviation related business.
  - The course will be taken after completion of the core of the Master's program.

## Course Textbooks

- A list of references accompanies course modules. The principal textbook is:

de Neufville, R. and A. Odoni, *Airport Systems: Planning Design and Management*, 2<sup>nd</sup> Edition, McGraw-Hill Education, 2013.

## Course Evaluation

- Students will be graded on a combination of an exam, a project and class participation.

## **Course Outline**

### **Day 1: Monday, January 23, 2017**

**Module 1: Introduction: Brief Review of State of the Industry [de Neufville]**

**Module 2: Airport Planning in the 21<sup>st</sup> Century [de Neufville]**

**Module 3: Growing Size and Complexity [Odoni]**

**Module 4: Review of Airside Capacity [Odoni]**

**Module 5: Airport Operations [Sulmona] [2 hours]**

### **Day 2: Tuesday, January 24, 2017**

**Module 6: Uncertainty in Airport Planning [de Neufville]**

**Module 7: Airport Forecasting [de Neufville]**

**Module 8: The Changing Airline industry: impacts on Airports [de Neufville]**

**Module 9: Peaking Patterns and Planning Targets [Odoni]**

**Module 10: Airport Delays and Congestion [Odoni] [2 hours]**

### **Day 3: Wednesday, January 25, 2017**

**Module 11: Airport Privatization [Odoni]**

**Module 12: Airport Governance [Odoni]**

**Module 13: Airport User Charges and Regulation [Odoni]**

**Module 14: Security and Facilitation [Sulmona] [2 hours]**

**Module 15: The Master Plan Process [Sulmona]**

### **Day 4: Thursday, January 26, 2017**

**Module 16: Passenger Building Concepts [de Neufville]**

**Module 17: Capacity of Airport Passenger Buildings [de Neufville]**

**Module 18: Passenger Building Design [de Neufville]**

**Module 19: Airport Environmental Planning and Management [Sulmona] [3 hours]**

## **Day 5: Friday, January 27, 2017**

**Module 20: Financing Airport Development [Odoni]**

**Module 21: The Airline-Airport Relationship [Odoni][2 hours]**

**Module 22: Effects of Airline Deregulation / Strategic Planning [de Neufville]**

**Module 23: Multi-airport Systems [de Neufville]**

**Module 24: Ground Access and Distribution [de Neufville]**

## **Day 6: Saturday, January 28, 2017**

**Module 25: Airport Marketing, Revenue Development, Land Development [Sulmona] [3 hours]**

**Module 26: Airport Terminal Rentals and Concessions [Sulmona]**

**Planning of Term Projects: Discussion of Projects [All] [2 hours]**