

**SYST 660/OR 750
AIR TRANSPORTATION SYSTEMS ENGINEERING
SPRING 2008**

**Research I, Room 405
Mondays 7:20pm – 10pm
Instructor: Prof. Sherry
Office: Rm. 409, Research I
Office Hours: Monday 4pm – 6pm or by appointment**

COURSE OBJECTIVE:

The student will be introduced to a wide range of current issues in air transportation. The issues include: industry economics, system capacity, current system modeling capability, human factors considerations, safety analysis, technology innovation and public policy. The student is expected to develop a broad understanding of the contemporary and future issues through simulation and analysis of the NAS and it's stakeholders. The course will be conducted as a seminar course and will emphasize development of student's critical reading and analysis skills. The student's knowledge will be evaluated through class discussions, class presentations, homework and exams.

PRE (CO) REQUISITES: graduate standing, experience in air traffic control, transportation, or permission of instructor

TEXT BOOKS: (Required)

Air Transportation Systems Engineering, Donohue and Zellweger (Editors), Progress in Astronautics and Aeronautics Volume 193, American Institute of Aeronautics and Astronautics, 2001.

TEXT BOOKS: (Optional)

Airport Systems: Planning, Design, & Management. De Neufville and Odoni. McGraw Hill (2003)

SCHEDULE (Tentative, Subject to Change)

| Week | Topic | Source | Homework (Due Date) |
|-------------|--|---|--|
| 1 – 1/28 | Airports Overview Airport Assignments | Class Handouts http://www.airnav.com | Airport Characteristics (week 2) |
| 2 – 2/4 | Airport Design | Chap 9 deNeufville/Odoni | #1 pg 362 (week 3) http://www.transtats.bts.gov/ Airport Paretto Frontier (Schedule vs Actual) |
| 3 – 2/11 | Airport Capacity | Chap 10 deNeufville/Odoni <i>Chap 5 Donohue</i> <i>Chap 25 Donohue</i> | ADR/AAR Distribution Week 4) |
| 4 – 2/18 | Airport Delays | Chap 11 deNeufville/Odoni <i>Chap 8 Donohue</i> | Pushback Distribution Taxi-out Distribution (week 5) |
| 5 – 2/25 | Airport Flows & Queues, Airport | Chap 23 deNeufville/Odoni Chap 24 deNeufville/Odoni | Schedule Distribution Peak Hour Analysis |

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|------------------|--|---|---|
| | Peak Hour Analysis | | (week 6) |
| 6 – 3/3 | Airport Demand Management | Chap 12 deNeufville/Odoni Chap 10 Donohue | Review for Mid-term |
| 7 – 3/10 | Spring Break | | |
| 8 – 3/17 | Mid-term | | |
| | Air Traffic Management | Chap 13 deNeufville/Odoni http://skyvector.com http://skyvector.com/#31-23-3-1930-1241 Chap 2 Donohue Chap 7 Donohue Chap 23, 24 Donohue | Distribution of Runway Configuration SIDS STARS TRACON (week 9) |
| 9 – 3/24 | Ground Delay Program (GDP) | Handouts http://cdm.fly.faa.gov/cdmweb/index.html (GDP Process) http://www.fly.faa.gov/ http://www.fly.faa.gov/Products/AADC/aadc.html | |
| 10 – 3/31 | GDP | Handouts Chap 11 Donohue Chap 12 Donohue Chap 16 Donohue | |
| 11 – 4/7 | Environmental Impacts | Chap 6 deNeufville/Odoni | #1, #2 pg 211 (week 13) |
| 12 - 4/14 | Airport Env • Impact of Airport Related Emissions on Public Health and the Environment • Emission Inventories for 3 Airports | http://www.nescaum.org/documents/aviation_final_report.pdf | Emissions Inventory (week 14) |
| 13 – 4/21 | Airport Env • Technical and Operational Measures for Reducing Airport Emissions • Policy Strategies for Reducing Airport Emissions | http://www.nescaum.org/documents/aviation_final_report.pdf | Emissions Mitigation (week 15) |
| 14 – 4/28 | Safety | FAA Safety Management System http://www.faa.gov/airports_airtraffic/airports/airport_safety/safety_management_systems/SMS_Guidance_&_Tools_-_Advisory_Circular_150/5200-37_Introduction_to_Safety_Management_Systems_for_Airport_Operators | Safety Analysis (week 15) |
| 15 – 5/5 | Safety | FAA Safety Management System Chap 29, 30, 31 Donohue | Review for Final Exam |
| 16 – 5/12 | Final Projects (Due) Final Exam | | |
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GRADING:

- 30% Mid-term exam
- 30% Final exam
- 20% Final Projects

20% homework and class participation

FINAL REPORTS:

Airport Analysis (collated airport homework assignments)

6-10 page double spaced. Includes references and figures.

ACADEMIC HONESTY:

- Honor code strictly enforced
- Suspected violations will be reported

OTHER SOURCES OF INFORMATION

(Optional) *The Airline Handbook – The Online Version*, Air Transport Association,
<http://members.airlines.org/about/d.aspx?nid=7946>

(Optional) *Profit Strategies for Air Transportation*, George Radnoti, Aviation Week Books

(Optional) *Fundamentals of Air Traffic Control*, 3rd Edition, Michael Nolan, International Thomson Publishing, 2001

(Optional) *Commercial Aviation Safety*, Alexander Wells, McGraw Hill

(Optional) *Straight and Level: Practical Airline Economics*, Stephen Holloway, Ashgate