

## SYLLABUS SYST 460/560 FALL 2008

**Instructor:** Lance Sherry

**Location:** Research I, Room 405 (moved from S&T II Room 206)

**Contact Info:** 703-993-1711, [lsherry@gmu.edu](mailto:lsherry@gmu.edu), Research I – 409

**Office Hours:** Tue 4pm-6pm

| Week | Date*          | Topic                             | Material   | Homework                       | Handouts     |
|------|----------------|-----------------------------------|--|--------------------------------|--------------|
| 1    | Aug 25         | • Syllabus<br>• Aerodynamics      | Syllabus<br>AeroHandouts                         | HW#1 Aero                      | -            |
|      | Sept 1         | Labor Day                         |  |                                |              |
| 2    | Sept 8         | Navigation                        | Nolan Chap 2                                     | <i>HW#2 Navigation</i>         |              |
| 3    | Sept 15        | • Surveillance<br>• Communication | Nolan 4<br>Nolan 8<br>ATCQuiz                    | <i>HW#3 Surv/Comm</i>          |              |
|      | Sept 22        | Airspace                          | Nolan 3, 5, 6, 9                                 |                                |              |
| 4    | Sept 29        | Airports                          | Airport Diagram<br>Handout                       | <i>HW#4 Airport</i>            | Wilding RHAs |
| 5    | Oct 6          | London to New York                | Handout<br>London to New York<br>Stewart Chap 10 | Review for Mid-term            |              |
| 6    | Oct 13<br>(14) | Airport Capacity                  | Odoni 10   | HW#5 Airport Capacity Analysis |              |
| 7    | Oct 20         | Mid-term Exam                     |  |                                | -            |
| 8    | Oct 27         | Runway Capacity                   | RunCap Handout<br>RunCap Spreadsheet             | HW#6 RunwayCap                 |              |
| 9    | Nov 3          | Airport Delays                    | Odoni 11, 23                                     | HW#7 Airport Delay Analysis I  |              |
| 10   | Nov 10         | Airport Slots                     | Gillen Handout<br>Fortsyth Handout               | HW#8 Airport Delay Analysis II | -            |
| 11   | Nov 17         | Airport Demand Management         | Odoni 12   |                                |              |
| 12   | Nov 24         | Ground Delay Program              | Odoni 13   | HW#9 GDP                       |              |
|      | Nov 26<br>– 30 | Thanks Giving Break               |  |                                |              |
| 13   | Dec 1          | Aviation Env                      | Odoni 6  | HW#10 AvEnv                    |              |
| 14   | Dec 8          | Safety                            | Safety Handout                                   | Review for Final Exam          |              |
| 16   | Dec 15         | Final Exam                        | -  |                                |              |

\* Dates all tentative, subject to change without notice.

### Text Books:

1. **Fundamentals of Air Traffic Control** – Michael S. Nolan ISBN 0-534-39388-8
2. **Airport Systems: Planning, Design and Management** – Richard deNeufville, Amadeo Odoni (2003) ISBN 10-0-07-138477-4

(Note: This book is the text-book for the follow-on course OR750/SYST660)

**Other Sources:**

3. **Terminal Chaos (AIAA, Library of Flight) George Donohue and Russel D. Shaver III. ISBN – 978-1-56347-949-6**
4. **Air Transportation Systems Engineering (Progress in Astronautics and Aeronautics, 193). George L. Donohue and Andres G. Zellweger (Editors), American Institute of Aeronautics and Astronautics, AIAA, 2001.**
5. How to Become a Pilot – FAA
6. Private Pilot – Jepperson
7. Understanding Mathematics for Aircraft Navigation – James S. Wolper
8. Flying the Big Jest – Stanley Stewart
9. Optimizing Jet Transport Efficiency – Carlos E. Padilla
10. Airport Operations – Norman Ashford, H.P. Martin Stanton
11. Air Traffic Control. Order 7110.65P, Federal Aviation Administration, February 2004.
12. FAA Airport Capacity Benchmark Report 2004. Federal Aviation Administration, 2004.
13. Flight to the future : Human Factors of Air Traffic Control. Christopher D. Wickens, Anne S. Mavor, and James, P. McGee, editors ; Panel on Human Factors in Air Traffic Control Automation, National Academy Press, 1997.
14. Airline Operations Research, by Dusan Teodorovic. Gordon Breach Publishers, 1991.
15. Air Transport Systems Analysis and Modelling (Transportation Studies), by Milan Janic, Gordon Breach Inc., 2001.
16. Transportation Demand Analysis. Adib Kanafani. McGraw-Hill, 1983.
17. Issues in Air Transportation and Airport Management, TRB 1094, Transportation Research Board, 1986.
18. Integrated Noise Model User's Manual V. 6.0. Federal Aviation Administration - ATAC, 2000.
19. National Airspace System Plan 4.0, FAA, March 1999.
20. Securing the Future of U.S. Air Transportation: A System in Peril, Committee on Aeronautics Research and Technology for Vision 2050, Studies and Information Services, National Research Council (NRC).

**Notes:**

1. This course is intended to provide an introduction to Air Traffic Control (ATC) for those who plan to work or conduct research in the aviation industry.
  - a. It is a required course for those students interested in specializing in air transportation systems by taking more in-depth courses.
2. The course will survey the entire field, providing an understanding of the components and operation of the National Airspace System (NAS).
  - i. The course will include aircraft operations and systems, airline operations, air traffic control operations, systems and technologies, and the structure and functions of the FAA.
  - ii. The course will include the measurement and study of the performance of the NAS.
3. The course will involve class participation, regular homework, simulation and modeling, site visits, and some field work collecting and analyzing data.
4. Course Objective: Students will learn the necessary basic knowledge in air traffic management of the air transportation system. This course prepares students for work in the industry and for conduct of graduate studies and research.
5. Relationship to Other Courses: This is a required course for graduate students in air transportation systems. This course is prerequisite for OR750/SYST660.
6. Expectations for Student Participation: This course material is dominated by knowledge (facts). As a consequence, it is expected that each student spend 30 minutes (min) each day testing their knowledge

on the subject of the prior week using the Test Question Data-bank. Remember, “learning takes place at the time of failure of expectation.” This expectation is required of each student.

**Student Obligations:**

- Student obligations:
  - Weekly homework/quiz
    - turned in at start of class
    - Late penalty 10%
  - Mid-term Exam (Closed book)
  - Final Exam (Closed-book)
  - Final Project\*
    - Abstract due day of Mid-term (Oct 4)
    - Final paper due last day of class (Dec 7)

\* Graduate Students only

**Grading:**

**Undergraduates**

- Homework/Quizzes (30%)
- Mid-term Exam (35%)
- Final Exam (35%)

**Graduates**

- Homework/Quizzes (25%)
- Mid-term Exam (25%)
- Final Exam (25%)
- Final Project (25%)

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**Academic Honesty:**

- Honor Code strictly enforced.
- Suspected violations will be reported

**Office Hours:**

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