SYLLABUS
SYST 460/560 FALL 2009

Instructor: **Lance Sherry**
Location: **Fine Arts Building B212 (moved to Engineering Building, Room 4801)**
Contact Info: 703-993-1711, lsherry@gmu.edu, Engineering Building Room 4507
Office Hours: Wed 4pm-6pm or by appointment

Introduction to Air Traffic Control (ATC) is for those who plan professions in the air transportation industry. Surveys the entire field, presenting the history of ATC and how it came to be as it is, the technology on which the system is based, the procedures used by controllers to meet the safety and efficiency goals of the system, the organizational structure of the FAA, challenges facing the system, and means under investigation to meet these challenges. Fieldwork will be required to acquire and analyze airport operational data.

Course is available on-line.

Week		Topic	Material	Homework
1	Aug 31	Syllabus Review	Handout	
		Aerodynamics 1	Lecture	
2	Sept 7	Labor Day – No class		
3	Sept 14	Introduction to Airport Design and Operations	Intro to Airports Workbook	
		Airport Diagrams	Airport Diagram Workbook	
4	Sept 21	Air Traffic Control 1	deNeufville/Odoni 13 Intro to ATC Workbook	
5	Sept 28	Air Traffic Control 2		YK
6	Oct 5	Garmin 430 Desktop Simulator		
		Flight 1455 Accident Report	Flight 1455 Case Study Workbook	
7	Oct 12	Mid-term Exam 1		ASTIM
8	Oct 19	Runways	deNeufville/Odoni 9-1, 2, 3, 4, 5, 6	
9	Oct 26	Capacity of a Single Runway	deNeufville/Odoni 10-2, 5, 6 Runway Capacity Workbook	
10	Nov 2	Capacity of Runway Systems	deNeufville/Odoni 10-4 Runway System Capacity Workbook	
		Taxiway Capacity	deNeufville/Odoni 10-7 Taxiway Capacity	

			Workbook	
		Ramp Capacity	deNeufville/Odoni 10-7 Ramp Capacity Workbook	
11	Nov 9	Mid-term Exam 2		
12	Nov 16	Delays – 1	deNeufville/Odoni 11, 23 Delays Workbook	AvS
13	Nov 23	Delays - 2		
14	Nov 30	Aviation Environment - Water	deNeufville/Odoni 10-6 Ramp Capacity Water Workbook	
		Aviation Environment - Air	deNeufville/Odoni 10-6 Ramp Capacity Air Workbook	
		Aviation Environment - Noise	deNeufville/Odoni 10-6 Ramp Capacity Noise Workbook	
		Thanksgiving Break		
15	Dec 7	Safety	Safety Workbook	
16	Dec 14	Final Exam		

* Dates all tentative, subject to change without notice.

Text Books:

1. **Airport Systems: Planning, Design and Management – Richard deNeufville, Amadeo Odoni (2003) ISBN 10-0-07-138477-4**

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

Other Sources:

2. **Terminal Chaos (AIAA, Library of Flight) George Donohue and Russel D. Shaver III. ISBN – 978-1-56347-949-6**
3. **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.**
4. Fundamentals of Air Traffic Control – Michael S.Nolan ISBN 0-534-39388-8
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 Administation, February 2004.
12. FAA Airport Capacity Benchmark Report 2004. Federal Aviation Administation, 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:
    - Complete reading assignments and complete workbooks
    - Homework/quiz
        - turned in at start of class
        - Late penalty 10%
    - Mid-term Exams (Closed book)
    - Final Exam (Closed-book)
    - Field trips

Grading:

- Homework/Quizzes (25%)
- Mid-term Exam 1 (25%)
- Mid-term Exam 2 (25%)
- Final Exam (25%)

Academic Honesty:

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

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