

GEORGE MASON UNIVERSITY
SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING

I. CATALOG DESCRIPTION:

A. SYST 660/OR 660: Air Transportation Systems Modeling (3: 3: 0)

B. Prerequisites: graduate standing and experience in air traffic control design and modeling or SYST 460/560 or permission of instructor. SYST 611 and a graduate course in probability and statistics is also recommended.

C. Catalog Description:

The student will be introduced to a wide range of current issues in air transportation. The issues include: public policy toward the industry, industry economics, system capacity, current system modeling capability, human factors considerations, safety analysis and surveillance systems and new technological developments. The student is expected to develop a broad understanding of the contemporary and future issues. The student's knowledge will be evaluated through class discussions, a take home mid-term exam and a term project to be completed by the end of the semester.

II. JUSTIFICATION:

A. Course Objective: Students will learn the necessary knowledge to conduct research in air traffic management, modeling/simulation, economic, and safety of today's air transportation system. Students participate in class discussions and do independent projects. This course prepares students for work in both industry and a research environment.

B. Relationship to Other Courses: This is a required course for graduate students who want to study in the field of air transportation.

III. RECOMMENDATION:

A. This course has been approved by the following:

SEOR Committee	Date: <u>1 Nov 2002</u>
SITE graduate Committee	Date: <u>Jan 2003</u>
SITE Dean	Date: <u>Feb 2003</u>

Instructor: George L. Donohue, other faculty members as needed.

IV. SEMESTER AND YEAR FOR OFFERING: This course has been offered as a special topic in system engineering for 4 years and will be offered in the spring semester of 2004 and every spring semester after that.

V. COURSE SYLLABUS

Requirements:

10% class participation

35% mid-term

35% term papers

20% class presentation

Final exam consists of presentation of Term Papers selected at the beginning of the Semester.

Topic Outline:

- USA and European ATM Systems Similarities and Differences
- Economics of Congestion
- Collaborative Decision Making
- Airport Operation and Constraints
- Airspace Operation and Constraints
- Safety and Free Flight
- Cognitive Workload Analysis and The Change Role of The Air Traffic Controller
- Emerging Issues in Aircraft Self-Separation

Course Text:

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

5/29/2003