



**SAN JOSÉ STATE
UNIVERSITY**

***SAN JOSE STATE UNIVERSITY
DEPARTMENT OF AVIATION & TECHNOLOGY***

Air Traffic Control

Aviation 73 - 01

Fall Semester 2012

Class Days & Hours: Tuesdays 4:30 - 7:15 pm

Classroom: Reid Hillview Airport Campus 110

Code: 46270

Units: 3

Office Hours: Mondays from 10:00 a.m. to 10:30 a.m. in IS-134D.

Tuesdays from 4:00 to 4:29 p.m., and 7:16 to 7:30 RHV -110

Wednesdays from 9:45 a.m. to 10:30 a.m. in IS-134D.

Other days or times should be pre-arranged by email.

Instructor: Glynn Falcon

Office: IS-134D

Phone #s: 408-924-3203office, 650 400-1523 cell

E-Mail: ProfFalcon@aol.com

2nd E-mail: Glynn.Falcon@SJSU.edu

Catalog Description

Study of Air Traffic Control Systems, Structure, and Communications and the current configuration and future design of the National Airspace System. Oceanic and International Air Traffic Control, Automation Issues and Emerging Technologies are explored.

Prerequisite: Aviation 2.

Course Description

This course introduces the history of air navigation for both domestic and international environments. Included subjects are fundamentals of air navigation, the challenges of implementation of a global air navigation system, the visionary concepts of future communication, navigation, surveillance systems and air traffic management, along with emerging technologies, the “Free Flight” concept, and the regulatory challenges, in automation and man machine interface related to human factors, and the legal ramifications of ATC issues, errors and omissions.

Air transportation is a global business entering a dynamic period in the post-cold war era. Air travel will become increasingly dominant as the preferred mode for international travel for business and for pleasure. The amount of passenger and cargo traffic on intercontinental routes, particularly to/from East Asia and the Pacific Rim, is expected to increase rapidly, possibly quadrupling worldwide within the next few years.

International partnerships, expanding air service in developing countries, global environmental concerns, a global trend toward deregulation and liberalization of the airline industry, a growing need for airport and infrastructure capacity and a veritable technological revolution in avionics, air traffic control and information systems are examples of changes and challenges underway.

All aviation students have a critical need to understand the National Airspace System and the roles and responsibilities of all the entities that play a vital role in ensuring safety of flight from gate

to gate. Also, this course will discuss individual, as well as team and human-machine related, human factors issues that may lead to errors.

Course Objectives

At the conclusion of this class, the students will be able to:

- Demonstrate an understanding of the general principles and theory of operation of the U.S. air traffic control system.
- Demonstrate an understanding of the procedures used in radar and non-radar air traffic control.
- Have familiarization with international air traffic control.
- Have familiarization with future enhancements to the national airspace system.
- Be able to transition into Aviation 192 (Instrument Flight) with a sound grasp of instrument flight procedures.

Course Content

(Not necessarily in this order)

1. Air navigation- past, present and future
2. Principles of air navigation
3. Flight management systems
4. Emerging Technological Resources
5. Conflict Avoidance
6. Airspace Integration
7. Role of ICAO
8. CNS/ATM
9. Human factors of automation
10. Management of automation
11. Flight deck design
12. Future of air navigation

Required Texts:

Nolan, M. S. (2011) *Fundamentals of Air Traffic Control* (5th Ed). Florence, KY: Brooks/Cole Pub

FAA's *Air Traffic Controller's Handbook* (2009) (available free on-line) (Order 7110.65S)

FAA's *Instrument Procedures Handbook* (2007) (available free on-line) (FAA-H-8261-1A)

FAA's *Aeronautical Information Manual* (2009-10) (available free on-line)

FAA's *Pilot - Controller Glossary* (free on-line)

Reference Texts:

FAA's *Advanced Avionics Handbook* (2009) (available free on-line) (FAA-H-8083-6)

FAA's *Instrument Flying Handbook* (2007) (available free on-line) (FAA-H-8083-15A).

Suggested Reading:

McElroy, Paul (2000) *Tracon* Mass Market Paperback

Galotti, V. P. (1997). *The Future (sic) Air Navigation System* . Burlington, VT: Ashgate.

Other References:

The Future of Air Traffic Control, National Research Council, National Academy Press
Coping with Computers in the Cockpit, Sidney Dekker & Erick Hollnagel, Ashgate

Field Trips: One class evening we will visit the control tower at Reid-Hillview. On another, we will travel to Fremont to visit the “Oakland” Air Route Traffic Control Center.

GRADING

<u>Evaluation</u>	<u>Points</u>	<u>Percentage Weight</u>
5 Quizzes (best 5 out of 6)	100	25 %
Weekly Review Questions Home Work (13 papers)	100	25 %
Midterm	100	25 %
<u>Final</u>	<u>100</u>	<u>25 %</u>
TOTAL	400	100 %

The midterm exam will cover the first half of the semester and the final exam will cover the last half and any key foundational parts from the first half. Borderline grades will be influenced by the extent of your classroom participation. Although working together to understand principles is acceptable, copying another's paper or allowing another person to copy all or a portion of your paper is plagiarism and can result in dismissal from SJSU. I may change your seating arrangements at any time.

Note: A grade of “C-“ or better is required for all courses being used to satisfy any minor or major offered by the Department of Aviation, including preparatory courses.

Make-Ups and Late Work:

Usually, make-up of quizzes or assignments is not allowed. When allowed, it is only by giving prior notice of the problem and making arrangements for makeup, with supplied documentation for the absence.

Academic integrity statement (from the Office of Student Conduct and Ethical Development):

Your own commitment to learning, as evidenced by your enrollment at San Jose State University, and the university’s Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The policy on academic integrity can be found at: http://sa.sjsu.edu/student_conduct.

Campus policy in compliance with the Americans with Disabilities Act:

If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with DRC to establish a record of their disability.

Reading Schedule

Aviation 73

Instructor: Glynn Falcon

FATC = “Fundamentals of Air Traffic Control” by *Nolan*

This reading schedule means that by the start of class, you will have already read the chapter assignment, answered the review questions, and are prepared to be quizzed upon that chapter during class. So, as example, by 4 p.m. on Tuesday, September 4th, you will have read Chapter 1, answered the Chapter’s review questions, and be prepared for a possible Quiz on Chapter 1. That pattern continues each week during the semester.

8/28	Week 1	Introduction and Orientation, FATC - Chapter 13 “The FAA”
9/4	Week 2	FATC - Chapter 1 - “History of ATC”
9/11	Week 3	FATC - Chapter 2 - “Navigation Systems”
9/18	Week 4	FATC - Chapter 3 - “ATC System Structure”
9/25	Week 5	FATC - Chapter 4 - “ATC Communications”
10/2	Week 6	FATC - Chapter 5 - “ATC Procedures and Organization”
10/9	Week 7	FATC - Chapter 6 - “Control Tower Procedures”
10/16	Week 8	MIDTERM , followed by Reid-Hillview Control Tower Tour.
10/23	Week 9	FATC - Chapter 7 - “Non-radar En Route & Terminal Separation”
10/30	Week 10	FATC - Chapter 8 - “Theory & Fund. Of Radar Operation”
11/6	Week 11	FATC - Chapter 9 - “Radar Separation” FATC
11/13	Week 12	Oakland ZOA ARTCC - we will meet there in Fremont, California (date may change). 5125 Central Ave, Fremont, CA. Traffic is miserable, so plan on arriving early. If late, the FAA will deny you entry into the facility.
11/20	Week 13	FATC - Chapter 10 - “Operating in the National Airspace System”
11/27	Week 14	FATC - Chapter 11 - “Oceanic and Int’l ATC.”
12/4	Week 15	FATC - Chapter 12 - “Future of the National Airspace System”
12/12		FINAL EXAM Wednesday, December 12 1445-1700 Location: Reid Hillview Airport Campus Classroom 110