

## AVIA 202 - Air Traffic Control 2

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### Course Description :

Covers ATC procedures in terminal ATC environments for controllers and pilots. Emphasizes proper radio communications procedures, terminal ATC radar and non-radar separation and sequencing, correct application of applicable terminal ATC Operational rules and regulations for controllers and correct application of FAR and AIM rules and procedures for pilots.

### Course Notes - AVIA 202 :

- Provides an overview of US ATC Terminal Operations with emphasis on air safety philosophy, planning and implementation
- Develops fundamental skills for Controllers and Pilots:
  - Terminal ATC Radio and Radar procedures
  - Air traffic tracking, monitoring and control coordination procedures
    - ATC rules and procedures for IFR and VFR air traffic control
    - ATC Separation and Sequencing rules and methods
    - ATC Clearances and coordination procedures
    - ATC Emergency Services
  - Roles and responsibilities of controllers handling aircraft in distress

### Materials for the Course:

#### Texts and Handouts

- FAA Order 7110.65 (specific portions) and other selected FAAOs
- Fundamentals of Air Traffic Control – Michael S. Nolan, (4<sup>th</sup> Edition)
- FAR/AIM (Current Year) and other Flight Information Publications (FLIPs)
- Handouts for scenario practice
- Suggested Text – *Basic Aviation FUN-damentals*, Scott and Comollo

### Learning Objectives:

ATC 202 students should gain sufficient knowledge to:

- Understand Terminal ATC Processes and Operations
- Be able to describe, explain and be able perform very basic ATC control functions for Terminal Operations.
- Understand FAA separation standards, techniques and equipment Controllers and Pilots use to maintain traffic separation and sequencing in a Terminal ATC environment
- Manage a Terminal ATC environment with up to four Instrument (IFR) aircraft in a non-complex environment (i.e. non-mountainous terrain, good radio and radar coverage, no hazardous weather conditions).
- Understand the purpose of aircraft equipment and ground based (radio, radar, satellite, computer link) that must exist to conduct normal ATC operations.

### Grading and Evaluation:

#### Graded Student Learning

Class Grades for AVIA 202 will derive from

- (1) Written tests on FAAO 7110.65, FAR/AIM and selected FLIPs
- (2) Memory tests over any or all of the following specific topics:
  - a. Keyboard Data Entry (Controller and Ghost Pilot keystrokes)
  - b. Area Knowledge (Jackson Approach Control Terminal airspace)
  - c. ATC Flight Clearances, Flight Strip Marking and ATC data handling
  - d. Aircraft Performance and Aircraft Recognition
  - e. Controller-Pilot Phraseology

### Student Learning Evaluated But Not Graded

For AT-CTI students, the evaluation of non-graded items will be part of the overall faculty recommendation I must make to the FAA on your fitness to proceed into the FAA ATC work force. I will discuss the recommendation process with each student. The criteria I use to make a recommendation are: (this list is not all-inclusive, but rather representative)

- Ability to accurately hear, understand, repeat and record ATC information and instructions, using keyboard entry, manual entry on a Flight Strip, or note taking
- Ability to perceive potential ATC conflicts and take appropriate action in a timely manner
- Awareness of when to coordinate with other Air Traffic Controllers, the pilot, and with Air Traffic and other Aviation entities
- Comprehensive knowledge of ATC procedures and ability to apply rules appropriately
- Ability to work efficiently, effectively, thoughtfully, and cordially with others in a team environment
- Ability to attend classes on time, to complete work on time, to be ready for instruction with all necessary materials on time, and be a ready and able learner

### **Testing, Test Make-up, Retakes & Grading**

To earn 100%, students must take tests on or before the scheduled day. Class will decide, by vote, when to take tests (majority vote). Instructor can override class vote. Coordinate with the Instructor to make up or retake tests – Normally, students will have two attempts to score a test for grade. Normally, for knowledge tests, 90% is the highest score for a make-up test or a retake of a test. Tests completed 15 days or more after the designated test day will normally be capped at 80% score

### **Grade Components**

Tests and Quizzes of all types (Knowledge, Memory, etc) approximately 90 to 95%

Extra Credit opportunities approximately 10 to 5%

### **Grade percent to GRCC Scale Conversion (GRCC decimal grading system)**

| %   | GRCC | %  | GRCC | %  | GRCC | %  | GRCC |
|-----|------|----|------|----|------|----|------|
| 100 | 4.0  | 90 | 3.5  | 80 | 2.5  | 70 | 1.5  |
| 99  | 4.0  | 89 | 3.4  | 79 | 2.4  | 69 | 1.4  |
| 98  | 3.9  | 88 | 3.3  | 78 | 2.3  | 68 | 1.3  |
| 97  | 3.9  | 87 | 3.2  | 77 | 2.2  | 67 | 1.2  |
| 96  | 3.8  | 86 | 3.1  | 76 | 2.1  | 66 | 1.1  |
| 95  | 3.8  | 85 | 3.0  | 75 | 2.0  | 65 | 1.0  |
| 94  | 3.7  | 84 | 2.9  | 74 | 1.9  | 64 | 0.9  |
| 93  | 3.7  | 83 | 2.8  | 73 | 1.8  | 63 | 0.8  |
| 92  | 3.6  | 82 | 2.7  | 72 | 1.7  | 62 | 0.7  |
| 91  | 3.6  | 81 | 2.6  | 71 | 1.6  |    |      |

\*NOTE – AVIA 202 students must achieve a grade of GRCC 3.0 (85%) or better, or receive instructor permission to enroll in AVIA 203

**Academic Honesty:** Cheating in any form is cause to receive zero score and no chance to retake the test.

**Instructional methods:** (I usually use all of these methods to teach this class)

- Lectures with Seminar discussions
- Study Guides
- Tests and Quizzes
- ATC Computer Lab scenario demonstrations and practices
- Tours of ATC facilities

### **Campus-wide Outcomes:**

Green River Community College (GRCC) identified specific fundamental knowledge, skills, behaviors, attitudes, and values that GRCC students must possess to be successful after leaving the Green River Community College environment:

- A sense of the individual's responsibility to the community
- Quantitative and symbolic reasoning
- Critical thinking and rational decision-making
- Written & Oral Communications skills suitable for the modern business environment

### **A. Responsibility:**

1. Student must demonstrate knowledge of and a willingness to accept stated and agreed expectations, policies, behavior, and procedures.
2. Student must demonstrate accountability (punctual and ready to learn), integrity (does own work and pulls own weight in collaborative tasks), initiative (seeks help when needed), and tolerance (develops awareness of own biases).
3. Student actively and appropriately interacts with others and is able to respect everyone's opinion.

**Student demonstrates these attributes by preparing for lectures and discussions, submitting assignments in on time, and being accountable to work groups within which the student participates**

### **B. Quantitative/Symbolic Reasoning:**

1. Student evaluates and interprets information / data accurately and usefully.
2. Student recognizes which processes or methods are appropriate for solving a given problem, and correctly implements those processes.
3. Student demonstrates the ability to estimate a solution to a presented problem
4. Student translates data into various formats such as graphs, tables, formulas, and sentences.

**Student demonstrates these attributes through class work, homework, project work and tests.**

### **C. Critical Thinking:**

1. Student provides reasons for the conclusions they reach and assess the relevance and adequacy of those reasons.
2. Student connects past learning with current topics.

**Student demonstrates these attributes through class work, homework, project work and tests.**

### **D. Written & Oral Communications:**

1. Student demonstrates involvement with the material by expressing a clear awareness of purpose, unity, and focus in his or her writing or speaking.
2. Student demonstrates clear organization of his or her thoughts in written and oral communications.
3. Student demonstrates well-organized and logical writing while using correct grammar and spelling.

**Student demonstrates these attributes through class work, homework, project work and tests.**

### **Special Needs:**

If you, due to a disability of any kind, need course adaptations or special accommodations because of the disability, have special emergency medical information the instructor should know, or need special accommodations in the event of an emergency building evacuation, please contact the Instructor and make sure the instructor fully understands your special need.

At GRCC, students with special needs may use alternate modes to communicate Special Needs information (email, phone). In any case, and using any format, students should inform the Instructor as soon as possible after the start of school about needs the student has. Students should also contact Disability Support Services (DSS) in LSC 277 – Phone DSS at: 253-833-9111, ext. 2631 or TDD at 253-288-3359.

### **AVIA 202 Topics:**

FAA Documents for Terminal ATC operations

- Flight Publications (FLIPS) & Notices to Airmen (NOTAMS)
  - IFR and VFR FLIPs and Charts for Terminal ATC Operations

Roles and Responsibilities of Terminal Air Traffic Controllers

- TRACON and Tower Controller responsibilities for Terminal ATC Operations
- ATC Duty priorities, operational Priorities and procedural implications

ATC Flight Data processing and information handling

- ATC Clearances and Terminal ATC Flight Strip information handling
  - Flight Strip/computer data entry, accuracy, timeliness and interpretation
  - Issuing Clearances and ensuring accuracy of clearance information
  - Electronic (keyboard) and hand written flight strip data support

ATC Radio and Landline communications

- Proper use of ATC communications
- Exactness of phraseology and essential need for clear communications
  - Importance of correct phraseology for radio communications
  - Importance of effective listening and speaking skills

Terminal ATC Radar Operations

- Terminal Radar separation standards, procedures and methodology and procedures for supporting IFR and VFR flight operations in a terminal area

Terminal Non-Radar ATC operations

- Non-Radar separation standards,
- Procedures and methodology for handling approaches and departures

Weather Information pertaining to ATC

- Weather impacts on Terminal ATC Operations
  - Impacts of marginal weather on traffic flows
  - Safety considerations during bad weather

ATC Normal and Routine Services

- Departure Operations
- Overflight Operations
- Arrival/Approach Operations

Aircraft Performance considerations

- Understanding and applying knowledge of Aircraft Class, Weight, Type, Category, Climb Rates, Speeds, and Wake Turbulence criteria during Terminal ATC operations

**GRCC AT-CTI Program Completion Standards (Approval Criteria) to earn a GRCC FAA AT-CTI Program Positive Recommendation (approval for FAA hiring opportunity)**

**APPROVAL CRITERIA**

ACADEMIC PERFORMANCE

A. Non-Aviation Courses

Successfully complete all non-aviation courses with at least a grade of 75% (GRCC grade 2.0) or higher,

B. Aviation Courses (except ATC Courses)

Successfully complete all aviation courses, except ATC courses, with at least a grade of 80% (GRCC grade 2.5) or higher

C. GRCC ATC Courses (except AVIA 203 Capstone Course)

Successfully complete all ATC courses excluding AVIA 203 ATC Capstone Course with at least a grade of 85% (GRCC grade 3.0) or higher

D. AVIA 203 Capstone Course

Successfully complete AVIA 203 – the GRCC ATC Degree Capstone Course – with at least 87% (GRCC grade 3.2) or higher, AND, complete the following tests in the AVIA 203 Capstone Class with at least a 90% average:

- a. The AVIA 203 Area Knowledge Test, and
- b. All AVIA 203 Phraseology Tests, with no Phraseology Test score below 80%, and
- c. All AVIA 203 Strip-Marking Tests, with no Strip Marking Test score below 80%, and
- d. All AVIA 203 *Final-Four* AT-Basics Final Tests, with no AT- Basics Test score below 80%

NOTE: Each student has two opportunities to take each of the AVIA 203 Capstone tests that require a minimum score of 80% and an overall average of 90%

E. Complete the ATC Degree Program with at least a minimum GPA of 85% (GRCC 3.0)

CONDUCT and DEMEANOR

Because excellent judgment is such a essential and important aspect of being an Air Traffic Controller, and because team work is such a vital and critical component of working in the Air Traffic Control profession, GRCC AT-CTI students must demonstrate excellent judgment and superior cooperative and respectful behavior at all times and in all situations or circumstances. Any factual situation or circumstance a GRCC AT-CTI student is involved in, that reflects on the student's judgment in any situation, or the student's ability to work effectively within groups, and which comes to the attention of the GRCC faculty through any sources or any means, will be part of the evaluation to determine the suitability of the student to be in the Air Traffic Control profession, and will directly affect the FAA AT-CTI GRCC Recommendation for FAA Hiring.