

Semper Fly Helicopters

14 CFR PART 141 FLIGHT SCHOOL



**AVIA 4222 - ADVANCED COMMERCIAL PILOT GROUND
ROTORCRAFT / HELICOPTER CERTIFICATION COURSE
GROUND TRAINING MANUAL**

TABLE OF CONTENTS

SECTION	PAGE
<u>Section 1 - Ground Training Syllabus</u>	1-1
1.1 <u>Course Requirements and Objectives</u>	1-1
1.2 <u>Commercial Pilot Course Minimum Time Summary</u>	1-3
1.3 <u>Grading Rubric</u>	1-4
<u>Section 2 - Stage Two Ground Training</u>	2-1
2.1 <u>Lesson 1: Turbine Helicopter Fundamentals - Part 1</u>	2-3
2.2 <u>Lesson 2: Turbine Helicopter Fundamentals - Part 2</u>	2-4
2.3 <u>Lesson 3: Turbine Helicopter Fundamentals - Part 3</u>	2-5
2.4 <u>Lesson 4: Long Line Fundamentals - Part 1</u>	2-6
2.5 <u>Lesson 5: Long Line Fundamentals - Part 2</u>	2-7
2.6 <u>Lesson 6: Long Line Fundamentals - Part 3</u>	2-8
<u>Section 3 - Stage Three Ground Training</u>	3-1
3.1 <u>Lesson 1: Advanced Navigation - Part 1</u>	3-3
3.2 <u>Lesson 2: Advanced Navigation - Part 2</u>	3-4
3.3 <u>Lesson 3: Radio Navigation</u>	3-5
3.4 <u>Lesson 4: Cross-Country Flying</u>	3-6
3.5 <u>Lesson 5: Garmin 650 & Aspen Flight Display</u>	3-7
3.6 <u>Lesson 6: Meteorology Review</u>	3-8
3.7 <u>Lesson 7: Aviation Physiology - Part 1</u>	3-9
3.8 <u>Lesson 8: Aviation Physiology - Part 2</u>	3-10
3.9 <u>Lesson 9: Flight Planning & Decision Making</u>	3-11
3.10 <u>Lesson 10: Comprehensive Commercial Pilot Review</u>	3-12
3.11 <u>Lesson 11: Final Test & Evaluation</u>	3-13
3.12 <u>Lesson 12: FAA Computer Knowledge Examination</u>	3-14

SECTION 1 - GROUND TRAINING SYLLABUS

1.1 - Course Requirements and Objectives

Enrollment Prerequisites

The Semper Fly Helicopters Commercial Pilot Rotorcraft / Helicopter Ground Training Course is designed to have the students concurrently enrolled in the associated Semper Fly Helicopters Commercial Pilot Rotorcraft / Helicopter Flight Training Course. As such, students must meet the following criteria:

1. Minimum Age: 17
2. English Proficiency - Students must be proficient in reading, writing, and speaking English to comply with FAA regulations
3. Financial Readiness - Students must be able to provide proof of ability to finance the training program, either through personal funds, loans, or GI Bill benefits for eligible veterans
4. Interview and Assessment - Semper Fly Helicopters reserves the right to conduct an interview in which the motivation and fitness for flight training can be assessed
5. Required Documents
 - A. U.S. Citizens
 - i. Proof of U.S. Citizenship
 - ii. Valid, unexpired U.S. passport OR
 - iii. Original or government-issued birth certificate of the U.S., American Samoa, or Swains Island AND a government-issued picture identification OR
 - iv. Original certification of birth abroad with raised seal (Form FS-545 or Form DS-1350) AND a government-issued picture identification OR
 - v. Original certificate of U.S. citizenship with raised seal (Form N-560 or N-561) or a Certificate of Repatriation (Form N-581) AND government-issued picture ID OR
 - vi. Original U.S. Naturalization Certificate with raised seal (Form N-550 or N-570) AND a government-issued picture ID
 - vii. FAA Class I or Class II Medical
 - viii. FAA Airman's Certificate: Private Pilot Certificate (Rotorcraft)
 - ix. FAA Airman's Certificate: Instrument Pilot Certificate (Rotorcraft)
 - x. FAA Knowledge Test (if completed)
 - B. Foreign Nationals
 - i. Passport
 - ii. Visa
 - iii. FAA Class I or Class II Medical
 - iv. Complete TSA Training application

Additionally, all students must satisfy the requirements identified in Part 141; Appendix D, applicable to the certificate or rating sought by the learner. If the student is degree seeking, they must meet the enrollment criteria of the University of Oklahoma Aviation Department.

Ground Training Course Objective

The student will develop the knowledge specified by 14 CFR Part 141 Appendix D and the Airman Certification Standards for a Commercial Pilot Rotorcraft / Helicopter certificate. The student will be expected to utilize this knowledge to receive a passing score on the Commercial Pilot Knowledge Test.

Ground Training Course Completion Standards

The ground-training course will be completed when the student pilot demonstrates knowledge that meets or exceeds those standards as outlined in the Semper Fly Helicopters Standard Operating Procedures and Safety Policies Manual and the Airman Certification Standards.

*(The ground curriculum contained in this training course outline may be substituted with previous training given that the student is credited no more than 50 percent of the aeronautical knowledge training requirements of this curriculum.)

Ground Training Curriculum

Ground school for the Commercial Pilot student is accomplished by enrollment in the course and a minimum of 62.0 classroom hours. An outline for each lesson is provided in the following Ground Training Syllabus. The academic instructor will be responsible for student knowledge who obtained credit by exam or who have not taken these courses.

Ground Training Textbooks

The ground-training course is structured by the Helicopter Pilot Textbook. Jeppesen Sanderson, Inc., the Federal Regulations FAR/AIM. Ground training lessons generally follow the sequence and content of these textbooks. Other required reference materials are listed in the Introduction Section of the Airman Certification Standards.

Training Records

Semper Fly Helicopters will establish and maintain current and accurate records of the participation of each student enrolled in the aviation program. These records will include as a minimum the date the student was enrolled, a chronological log of the student's course attendance, the subjects, and flight operations covered in the student's training, and the names and grades of any tests taken by the student. Additionally, a record will be maintained on the date the student graduated, terminated training, or transferred to another school. Whenever a student graduates, terminates training, or transfers to another school, the student's record will be certified to that effect by the chief instructor. The school will retain each student record for at least 1 year from the date that the student either graduates from the course to which the record pertains, terminates enrollment in the course to which the record pertains, or transfers to another school. These records will be kept in accordance with 14 CFR 141.101. The school will make a copy of these records available to the student upon request.

1.2 - Commercial Pilot Course
Minimum Time Summary

<u>TRAINING STAGE</u>	<u>DUAL</u>	<u>SOLO</u>	<u>X/C</u>	<u>NIGHT</u>	<u>ORAL</u>	<u>GROUND</u>
Ground Stage Two						7.8
Ground Stage Three						23.0
SUB-TOTAL						30.8

TOTAL GROUND TIME FOR COMMERCIAL PILOT COURSE: 62.0 HOURS

TOTAL FLIGHT TIME FOR COMMERCIAL PILOT COURSE: 85.0 HOURS

TOTAL SIMULATOR TIME FOR COMMERCIAL PILOT COURSE: 20.0 HOURS

1.3 - Grading Rubric

After each lesson, the instructor will assign grades for each ground or flight activity using the following scale:

GRADE	STUDENT PERFORMANCE	DESCRIPTION
A	Exceeds Standards	The student meets the FAA Airman Certification Standards and usually (50% of the time or more) exceeds those standards.
B	Meets Standards	The student meets the FAA Airman Certification Standards.
C	Below Standards	The student does not meet the FAA Airman Certification Standards.
F	Failure	Student non-participation or refusal to re-train
I	Incomplete	The allotted time was not sufficient for the student to perform the activity.
NG	Not Graded	The activity was not assigned to the student and will <u>not</u> be required to be completed in a separate training session.

NOTES

- With a grade of C, or F, the instructor must include amplifying comments on the grade form
- With a grade of C, F, or I, the student will be required to complete the activity to the FAA Airman Certification Standards in a separate training session.

SECTION 2 - STAGE TWO GROUND TRAINING

OBJECTIVES:

This stage introduces the student to the fundamentals of turbine and long line operations. The student will be presented with the advanced skills required to perform mission essential tasks of employment scenarios for helicopter pilots. Aviation safety will be emphasized by an acquaintance to some of the typical hazards encountered in VFR flight and how to recognize and avoid emergency situations.

Each student must read the syllabus content material prior to arriving for class. The student must be prepared to discuss the subject content during class.

REFERENCES:

1. The Semper Fly Helicopters Training Course Outline for the Commercial Pilot Rotorcraft / Helicopter Certification Course
2. The Semper Fly Helicopters Standard Operating Procedures and Safety Policies Manual
3. The Semper Fly Helicopters Private / Commercial Study Guide
4. Guimbal Cabri G2 Flight Manual
5. Guimbal Cabri G2 Flight Instructor Guide
6. Helicopter Pilot Textbook – Commercial Pilot
7. The FAR/AIM Manual
8. Aeronautical Decision Making for Commercial Pilots
9. Commercial Pilot for Rotorcraft Category Helicopter Rating Airman Certification Standards, FAA-S-ACS-16
10. Risk Management Handbook, FAA-H-8083-2

COMPLETION STANDARDS:

Successful completion of a stage occurs when the student possesses and demonstrates the knowledge to perform turbine and long line operations as a Commercial pilot.

INDEX

LESSON	HOURS	PAGE
<u>2.1 - Lesson 1: Turbine Helicopter Fundamentals - Part 1</u>	1.3	2-3
<u>2.2 - Lesson 2: Turbine Helicopter Fundamentals - Part 2</u>	1.3	2-4
<u>2.3 - Lesson 3: Turbine Helicopter Fundamentals - Part 3</u>	1.3	2-5
<u>2.4 - Lesson 4: Long Line Fundamentals - Part 1</u>	1.3	2-6
<u>2.5 - Lesson 5: Long Line Fundamentals - Part 2</u>	1.3	2-7
<u>2.6 - Lesson 6: Long Line Fundamentals - Part 3</u>	1.3	2-8
GROUND STAGE TWO - TOTAL HOURS	7.8	

2.1 - LESSON 1: TURBINE HELICOPTER FUNDAMENTALS - PART 1

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to introduce the student to turbine engine systems and appropriate application of turbine helicopters.

CONTENTS:

1. Difference between turbine and piston engine systems
2. Pros and cons of turbine and piston engine systems
3. Difference between turbine and piston missions

COMPLETION STANDARDS:

The student will have successfully completed this lesson when, by oral or written examination, he or she demonstrates an understanding of the differences between turbine and piston engine systems, along with the pros and cons of each, and the different missions of each type of engine.

2.2 - LESSON 2: TURBINE HELICOPTER FUNDAMENTALS - PART 2

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to introduce the student to the start-up and shut-down procedures, along with the hazards of both, and FADEC systems.

CONTENTS:

4. Start-up procedures
5. Shut-down procedures
6. Start-up Hazards
 - A. Hot Start
 - B. Hung Start
 - C. Wet Start
7. Shut-down Hazards
 - A. Engine Flash/Flare
 - B. Coking
8. Full Authority Digital Engine Control (FADEC) Systems

COMPLETION STANDARDS:

The student will have successfully completed this lesson when, by oral or written examination, he or she demonstrates a basic understanding of start-up and shut-down procedures, along with the hazards of both, and FADEC systems.

2.3 - LESSON 3: TURBINE HELICOPTER FUNDAMENTALS - PART 3

(Ground: 1.3 Hours)

OBJECTIVES:

The objective of this lesson is to invite the students to observe a practical application of the use of a turbine helicopter operation. The students will also be given an opportunity to converse with and ask questions of the owner, operator, and/or PIC.

CONTENTS:

9. Invite the students to visit a local company which utilizes turbine helicopters.
10. Give the student an opportunity to speak with, and ask questions of, the owner, operator, and/or pilot of a local turbine helicopter operation.

COMPLETION STANDARDS:

The student will have successfully completed this lesson when he or she participates in a visit to a local turbine helicopter operation.

2.4 - LESSON 4: LONG LINE FUNDAMENTALS - PART 1

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to introduce the student to long line operations and the associated aerodynamics.

CONTENTS:

1. The purpose of long line operations
2. The benefit of long line operations
3. Aerodynamic changes associated with long line operations

COMPLETION STANDARDS:

The student will have successfully completed this lesson when, by oral or written examination, he or she demonstrates an understanding of the purpose, benefits, and aerodynamic changes associated with long line operations.

2.5 - LESSON 5: LONG LINE FUNDAMENTALS - PART 2

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to introduce the student to the different types of long line operations, along with the safety concerns of each, and to introduce the additional level of communication required by long line operations.

CONTENTS:

4. Types of long line operations
 - A. Agriculture
 - B. Forestry
 - C. Fire Fighting
 - D. Construction
 - E. Search and Rescue
5. Safety Concerns
 - A. Agriculture
 - B. Forestry
 - C. Fire Fighting
 - D. Construction
 - E. Search and Rescue
6. Additional Required Communications

COMPLETION STANDARDS:

The student will have successfully completed this lesson when, by oral or written examination, he or she demonstrates a basic understanding of the different types of long line operations, their associated safety concerns, and the additional level of communications required for long line operations.

2.6 - LESSON 6: LONG LINE FUNDAMENTALS - PART 3

(Ground: 1.3 Hours)

OBJECTIVES:

The objective of this lesson is to invite the students to observe a practical application of the use of a long line operation. The students will also be given an opportunity to converse with and ask questions of the owner, operator, and/or PIC.

CONTENTS:

7. Invite the students to visit a local company which utilizes long line operations.
8. Give the student an opportunity to speak with, and ask questions of, the owner, operator, and/or pilot of a local long line helicopter operation.

COMPLETION STANDARDS:

The student will have successfully completed this lesson when he or she participates in a visit to a local long line helicopter operation.

SECTION 3 - STAGE THREE GROUND TRAINING

OBJECTIVES:

This stage introduces the student to regulations that apply to commercial pilot operations, advanced terminology and definitions. The student will be presented with the advanced skills of air navigation and flight planning procedures and techniques. The objective is to introduce students to various techniques, aids, and factors pertaining to the execution of a safe cross-country flight. The student will also be instructed on the primary physiological aspects of flight as a means to recognize, avoid, and/or take appropriate countermeasures. Aviation safety will be emphasized by an acquaintance to some of the typical hazards encountered in VFR flight and how to recognize and avoid emergency situations. The student will be given the advanced fundamentals for making quick, decisive, and mature decisions in normal flight as well as in emergency situations.

Each student must read the syllabus content material prior to arriving for class. The student must be prepared to discuss the subject content during class.

REFERENCES:

1. The Semper Fly Helicopters Training Course Outline for the Commercial Pilot Rotorcraft / Helicopter Certification Course
2. The Semper Fly Helicopters Standard Operating Procedures and Safety Policies Manual
3. The Semper Fly Helicopters Private / Commercial Study Guide
4. Guimbal Cabri G2 Flight Manual
5. Guimbal Cabri G2 Flight Instructor Guide
6. Helicopter Pilot Textbook – Commercial Pilot
7. The FAR/AIM Manual
8. Aeronautical Decision Making for Commercial Pilots
9. Commercial Pilot for Rotorcraft Category Helicopter Rating Airman Certification Standards, FAA-S-ACS-16
10. Risk Management Handbook, FAA-H-8083-2

COMPLETION STANDARDS:

Successful completion of a stage occurs when the student possesses and demonstrates the knowledge to perform as a Commercial pilot.

INDEX

LESSON	HOURS	PAGE
<u>3.1 - Lesson 1: Advanced Navigation - Part 1</u>	1.3	3-3
<u>3.2 - Lesson 2: Advanced Navigation - Part 2</u>	1.3	3-4
<u>3.3 - Lesson 3: Radio Navigation</u>	1.3	3-5
<u>3.4 - Lesson 4: Cross-Country Flying</u>	2.6	3-6
<u>3.5 - Lesson 5: Garmin 650 & Aspen Flight Display</u>	1.3	3-7
<u>3.6 - Lesson 6: Meteorology Review</u>	1.3	3-8
<u>3.7 - Lesson 7: Aviation Physiology - Part 1</u>	1.3	3-9
<u>3.8 - Lesson 8: Aviation Physiology - Part 2</u>	1.3	3-10
<u>3.9 - Lesson 9: Flight Planning & Decision Making</u>	1.3	3-11
<u>3.10 - Lesson 10: Comprehensive Commercial Pilot Review</u>	8.0	3-12
<u>3.11 - Lesson 11: Final Test & Evaluation</u>	2.0	3-13
<u>3.12 - Lesson 12: FAA Computer Knowledge Examination</u>		3-14
GROUND STAGE THREE - TOTAL HOURS	23.0	

3.1 - LESSON 1: ADVANCED NAVIGATION - PART 1

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to teach the student the elements of advanced navigation as well as the use of flight computers.

CONTENTS:

1. Basic Navigation
 - A. Sectional Charts
 - B. VFR Terminal Area Charts
 - C. World Aeronautical Charts
 - D. Latitude and Longitude
 - E. Projections
 - F. Legend
 - G. Airport Symbolology
 - H. Airport Data
 - I. Navigation Aids
 - J. Airspace
 - K. Obstructions
 - L. Topographical Information
2. Flight Computers
 - A. Navigation Theory
 - B. Compensating for Wind
 - C. In-Flight Calculations
3. Mechanical Computers
 - A. E6B Navigational Computer (Slide Graphic Computer)
 - B. Electronic Flight Computers

COMPLETION STANDARDS:

The student will have successfully completed this lesson when, by oral or written examination, he or she demonstrates an understanding of the various elements relating to navigation and use of flight computers in support of navigation.

3.2 - LESSON 2: ADVANCED NAVIGATION - PART 2

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to teach the student the advanced navigation modes of pilotage, dead reckoning, as well as sources of information for flight planning.

CONTENTS:

4. Pilotage and Dead Reckoning
 - A. Pilotage
 - i. Selecting Checkpoints
 - ii. Following a Route
 - iii. Orientation
 - B. Dead Reckoning
 - i. Flight Planning
 - ii. Navigation Log
 - iii. Flight Plan
 - iv. Flying Over Hazardous Terrain
5. Sources of Flight Information
 - A. Airport/Facility Directory
 - B. Directory Legend
 - C. Other Flight Planning Information
 - D. Aeronautical Information Manual (AIMS)
 - E. Notices to Airmen
 - F. Advisory Circulars

COMPLETION STANDARDS:

This lesson will be successfully completed when, by oral or written examination, the student demonstrates an advanced ability to accurately plan a navigation route using pilotage, dead reckoning, and sources of flight information.

3.3 - LESSON 3: RADIO NAVIGATION

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to introduce the student to Radio Navigation. The student will be introduced to the operating principles of the VOR, DME and ADF.

CONTENTS:

1. VHF Omni-directional Range (VOR)
 - A. Principles of Operation
 - B. VOR Airborne Equipment
 - C. VOT Navigation
 - D. Course Information
 - E. To-From Indicator
 - F. Using VOR Navigation
 - G. Intercepting a VOR Radial
 - H. Time and Distance
 - I. VOR Orientation
 - J. VOR Cautions
 - K. VOR Advantages
 - L. VOR Test Signals
 - M. Classes of VOR Facilities
2. Distance Measuring Equipment (DME)
 - A. DME Theory
 - B. Using DME
 - C. DME Identification
3. VORTAC-Based RNAV
 - A. RNAV Operation
4. Global Positioning System (GPS)
 - A. GPS Operation
 - B. GPS Accuracy
 - C. GPS Receivers
 - D. VFR Use of GPS
5. Horizontal Situation Indicator

COMPLETION STANDARDS:

The student will have successfully completed this lesson when, by oral or written examination, he or she demonstrates advanced understanding of the Radio Navigation concerning VOR, DME, RNAV, GPS, and HSI.

3.4 - LESSON 4: CROSS-COUNTRY FLYING

(Ground: 2.6 Hours)

OBJECTIVES:

The objective is to show the student how to plan an advanced cross-country flight from start to finish.

CONTENTS:

1. The Flight Planning Process
 - A. Flight Overview
 - B. Developing the Route
 - C. Preflight Weather Briefing
 - D. Completing the Navigation Log
 - E. Flight Plan
 - F. Preflight Inspection
2. The Flight
 - A. KOUN to KSNL
 - B. KSNL to F81
3. Alternate Planning
 - A. Delays
 - B. Destinations

COMPLETION STANDARDS:

The student will have successfully completed this lesson when, by oral or written examination, he or she demonstrates an understanding of how to plan a cross-country flight from start to finish.

3.5 - LESSON 5: GARMIN 650 & ASPEN FLIGHT DISPLAY

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to teach the student the advance operation of the Garmin 650 and the Aspen Flight Display.

CONTENTS:

1. Device Overview
 - A. Interface
2. Aspen Primary Flight Display (PFD) System
 - A. Attitude Indicator
 - B. AHRS
 - C. IAS
 - D. Target Airspeed
 - E. Target Altitude
 - F. Target Heading
 - G. Target Course Indicator
 - H. Barometric Pressure
 - I. Air Data
 - J. Trend Indicators
3. Navigation Display
 - A. Flux Sensors Data
 - B. VOR and GPS Data
 - C. VSI Data
 - D. "Blue Diamond"
 - E. Alternate Displays

COMPLETION STANDARDS:

This lesson will be successfully completed when, by oral or written examination, the student demonstrates the understanding of the Garmin 650 and Aspen PFD.

3.6 - LESSON 6: METEOROLOGY REVIEW

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to review hazardous weather conditions and how to interpret weather data.

CONTENTS:

1. Weather Hazards
 - A. Thunderstorms
 - B. Turbulence
 - C. Low Visibility
 - D. Wind Shear
 - E. Icing
2. Printer Reports and Forecasts
 - A. Aviation Routine Weather Report
 - B. Type of Report
 - C. Wind Information
 - D. Visibility
 - E. Sky Condition
 - F. Temperature and Dew Point
 - G. Terminal Aerodrome Forecast
 - H. Type of Report
 - I. Location Identifier and Issuance Date/Time
 - J. Valid Period
 - K. Forecast and Area Forecasts
 - L. VFR Clouds and Weather
 - M. Winds and Temperatures Aloft Forecasts
 - N. Severe Weather Reports and Forecasts
3. Graphic Weather Products
 - A. Standard Weather Briefing
 - B. Abbreviated Briefing
 - C. Outlook Briefing
 - D. Self Briefing
 - E. Supplemental Weather Sources
4. In-Flight Weather Services
 - A. En-Route Flight Advisory Service
 - B. In-Flight Aviation Weather Advisories
 - C. AIRMETs and SIGMETs
 - D. Severe Weather Forecast Alerts
 - E. Center Weather Advisories
 - F. Hazardous In-Flight Weather Advisory Service
 - G. Automated Weather Observing System (AWOS)
 - H. Automated Surface Observation System (ASOS)

COMPLETION STANDARDS:

This lesson will have been successfully completed when, by oral or written examination, the student demonstrates an advanced understanding of the hazardous weather conditions and how to interpret weather data.

3.7 - LESSON 7: AVIATION PHYSIOLOGY - PART 1

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to introduce the student to the advanced principles of aviation physiology and elements that contribute to spatial disorientation.

CONTENT:

1. Physiology
 - A. Vision in Flight
 - B. The Eye
 - C. Cones
 - D. Rods
 - E. Night Vision
 - F. Night Scanning
 - G. Aircraft Lighting
 - H. Visual Illusions
 - I. Auto kinesis
 - J. Night Myopia
 - K. Landing Illusions
2. Spatial Disorientation
 - A. Visual Sense
 - B. Vestibular Sense
 - C. Kinesthetic Sense
 - D. Disorientation
 - E. Spatial Illusions (Coriolis Illusion, Leans, Somatogravic Illusions, False Horizons)
 - F. Flicker Vertigo
 - G. Motion Sickness

COMPLETION STANDARDS:

The student will have successfully completed this lesson when, by oral or written examination, he or she demonstrates an advanced understanding of flight physiology and spatial disorientation.

3.8 - LESSON 8: AVIATION PHYSIOLOGY - PART 2

(Ground: 1.3 Hours)

OBJECTIVES:

The objective is to further cover various elements of aviation physiology as it relates to respiration, altitude, alcohol, drugs and their effect on performance.

CONTENT:

3. Respiration and Altitude
 - A. Respiration
 - B. Hypoxia
 - C. Hypoxic Hypoxia
 - D. Hypemic or Anemic Hypoxia
 - E. Stagnant Hypoxia
 - F. Histotoxic Hypoxia
 - G. Supplemental Oxygen
 - H. Hyperventilation
 - I. Pressure Effects
 - J. Ears
 - K. Sinuses
 - L. Teeth
 - M. Gastrointestinal Tract
 - N. Scuba Diving
4. Alcohol, Drugs and Performance
 - A. Depressants
 - B. Alcohol
 - C. Tranquilizers
 - D. Motion Sickness Medication
 - E. Stomach Medication
 - F. Decongestants and Antihistamines
 - G. Stimulants
 - H. Amphetamines
 - I. Caffeine
 - J. Nicotine
 - K. Pain Killers
 - L. Other Problem Drugs
 - M. Antibiotics

COMPLETION STANDARDS:

The student will have successfully completed this lesson when, by oral or written examination, he or she demonstrates an advanced understanding of the effects of altitude, respiration, drugs, alcohol and their effect on pilot performance.

3.9 - LESSON 9: FLIGHT PLANNING & DECISION MAKING

(Ground: 1.3 Hours)

OBJECTIVES:

The objective of this lesson is to review elements associated with planning and organizing flights and gain an understanding of factors that affect the decision process as well as cockpit resource management.

CONTENTS:

1. Planning and Organizing Flights
 - A. Initial Planning
 - B. Final Planning Stage
 - C. Cockpit Management
2. Factors Affecting the Decision Process
 - A. The Decision Process
 - B. Hazardous Attitudes
 - C. Antidotes for Hazardous Attitudes
 - D. Risk Assessment
 - E. Stress Reduction
 - F. Self-Assessment
3. Cockpit Resource Management
 - A. Primary Resources
 - B. Preparation
 - C. Preflight
 - D. Departure
 - E. En route
 - F. Arrival
 - G. Expanding Your Resources
 - H. Additional certificates and ratings

COMPLETION STANDARDS:

The student will demonstrate Commercial Pilot knowledge level per ACS Standards of flight planning and decision making methodology. The student should be able to demonstrate the ability to recognize hazards and have an awareness of some of the advanced methods to avoid risks.

3.10 - LESSON 10: COMPREHENSIVE COMMERCIAL PILOT REVIEW

(Ground: 8.0 Hours)

OBJECTIVES:

The objective of this lesson is to provide the student an opportunity to review all material covered in Stage One and Two and prepare for the course final examination.

CONTENTS:

1. All material covered in Ground Stages One, Two, and Three
2. Oral examination format review

COMPLETION STANDARDS:

This lesson will have been successfully completed when the student, by oral or written examination, shows that he or she has an advanced level of understanding of all the topics covered in Stages One and Two along with knowledge of the oral examination format.

3.11 - LESSON 11: FINAL TEST & EVALUATION

(Ground: 2.0 Hours)

OBJECTIVES:

To determine the student's level of knowledge on the subject matter covered during this ground curriculum.

REFERENCES:

1. Helicopter Flying Handbook
2. The FAR/AIM Manual
3. Aviation Instructor's Handbook
4. Risk Management Handbook
5. Pilot's Encyclopedia of Aeronautical Knowledge
6. Aviation Weather For Pilots
7. Aviation Weather Services

CONTENTS:

This examination will cover Stage One, Two, and Three material. The examination shall, as a minimum, consist of (but is not limited to) at least 25 FAA computer knowledge examination type multiple-choice questions.

COMPLETION STANDARDS:

Grading is based on the traditional scale:

- A = 90% to 100%
- B = 80% to 89%
- C = 70% to 79%
- D = 60% to 69%
- F = below 60%

Students who do not achieve a satisfactory score (80 +) must be scheduled for additional instruction in the area(s) of deficiency identified by the examination or must retake the course.

3.12 - LESSON 12: FAA COMPUTER KNOWLEDGE EXAMINATION

OBJECTIVES:

This lesson provides the student an opportunity to participate in the FAA Helicopter/Rotorcraft Commercial Pilot written knowledge examination.

CONTENTS:

This examination will cover all topics found within the applicable Airman Certification Standards and FAR/AIM sections. There are 100 randomly selected questions covering all topics addressed within the Commercial Pilot Ground Course.

COMPLETION STANDARDS:

The student completes the course when he or she passes the FAA Computer Knowledge Test with a minimum score of 70% corrected to 100%. Students who do not achieve this score must be scheduled for additional instruction and re-examination, or be re-enrolled in the course.

ELIGIBILITY REQUIREMENTS:

Applicants **MUST** have either the instructor of the ground course or a flight instructor endorse their logbook to certify that the student is competent to take the test.

KNOWLEDGE AREAS ON THE TESTS:

The tests are comprehensive, as they must test an applicant's knowledge in many subject areas. All test questions are the objective, multiple choice type, with three choices of answers; each question can be answered by the selection of a single response. Each test question is independent of other questions, that is, a correct response to one does not depend upon, or influence the correct response to another. The maximum time allowed for taking the Commercial Pilot knowledge examination is 3.0 hours.

When taking a test, keep the following points in mind:

1. Answer each question in accordance with the latest regulations and procedures.
2. Read each question carefully before looking at the possible answers. You should clearly understand the problem before attempting to solve it.
3. After formulating an answer, determine which choice most nearly corresponds with the answer. The answer chosen should completely resolve the problem.
4. From the answers given, it may appear that there is more than one possible answer. However, there is only one answer that is correct and complete. The other answers are incomplete, erroneous, or represent common misconceptions.
5. If a certain question is difficult for you, it is best to mark it for RECALL and proceed to the next question. After you answer the less difficult questions, return to those, which you marked for recall and answer them. The recall marking procedure will be explained to you prior to starting the test. Although the computer should alert you to unanswered questions, make sure every question has an answer recorded. This procedure will enable you to use the available time to maximum advantage.
6. When solving a calculation problem, select the answer nearest your solution. The problem has been checked with various types of calculators; therefore, if you have solved it correctly, your answer will be closer to the correct answer than any of the other choices.

REMEMBER:

You always have an opportunity to take a sample test before the actual test begins.

ARRIVING FOR THE TEST:

When you arrive for the test, you should have a flight computer, a pocket calculator, a plotter, and a **PENCIL (NO PENS PLEASE)**. If you plan to use an electronic flight computer, the test monitor must ask you to remove the batteries to ensure that no information is in memory. **DO NOT LOSE THE AIRMAN TEST REPORT**, as you will need to present it to the examiner prior to taking the practical test. Loss of this report means that you will have to request a duplicate copy from the FAA in Oklahoma City.

CHEATING OR OTHER UNAUTHORIZED CONDUCT:

When entering the test area, you are permitted to take only scratch paper furnished by the test administrator and an authorized aviation computer, plotter, etc., approved for use in accordance with FAA Order 8080.6C, Conduct of Airmen Knowledge Tests via the Computer Medium, and AC 60-11C, Aids Authorized for Use by Airman Written Test Applicants. The FAA has directed testing centers to stop a test any time a test administrator suspects a cheating incident has occurred. An FAA investigation will then follow. If the investigation determines that cheating or other unauthorized conduct has occurred, any airman certificate that you hold may be revoked, and you may not be allowed to take a retest for 1 year.

RE-TESTING PROCEDURES:

If the score on the airman test report is 70 or above, in most cases the report is valid for 24 calendar months. You may elect to retake the test in anticipation of a better score. Prior to retaking the test, you must give your current airman test report to the Test Monitor. Remember, the score of the latest test you take will become the official test score.

University Policies

Generative AI Policy Statement for OU School of Aviation Courses

Generative artificial intelligence (AI) tools, such as ChatGPT, Google Gemini, and other similar platforms, are strictly **prohibited** for use in this course. This policy applies to all assignments, including but not limited to ground school exercises, flight planning tasks, and any part of flight training. The use of generative AI will be treated as an act of academic misconduct, subject to the OU's academic integrity policies.

Specific Assignment Policies & Rationale

1. Ground School Quizzes & Exams

Policy: Generative AI is not permitted. Rationale: In ground school, students must develop a deep and personal understanding of aviation principles, regulations, and systems. The use of generative AI to complete quizzes or exams bypasses the critical process of learning and memorization essential for pilot competency. A pilot must recall vital information under pressure without relying on external aids. The ability to recall regulations (e.g., FARs), weather codes (e.g., METARs), and aircraft systems information is non-negotiable for safety.

2. Flight Planning Exercises

Policy: Generative AI is not permitted. Rationale: The purpose of flight planning exercises is to teach you how to meticulously calculate weight and balance, runway performance, fuel burn, and navigate using aeronautical charts. Using AI would provide a solution without requiring you to engage in the step-by-step process, which is where the real learning happens. A pilot must be able to perform these calculations manually, as a system failure in the cockpit or an error in an automated tool could have catastrophic consequences. This skill ensures you can always cross-check and verify automated systems.

3. Pre-Flight Checklists & Procedures

Policy: Generative AI is not permitted. Rationale: Pre-flight checklists and procedures are the foundation of safe flight operations. A pilot must internalize these procedures to the point where they are second nature. Relying on an AI to generate or summarize a checklist would undermine this fundamental training. The consequences of a missed item on a pre-flight checklist could be severe. This hands-on, procedural knowledge is paramount and cannot be delegated to an AI.

Why Generative AI is Inappropriate in Flight Training

While generative AI may be integrated into many aspects of modern life, its application in aviation training is fundamentally misaligned with the core principles of pilot education. Pilots must cultivate a unique set of skills: **critical thinking, situational awareness, rapid decision-making**, and a deep, ingrained understanding of aircraft systems and airmanship. These are not just intellectual exercises; they are skills developed through hands-on practice, repetition,

and a trial-and-error process that cannot be replicated by simply asking an AI for an answer. The danger of using generative AI is that it creates a **false sense of competency**, a reliance on an external "brain" that will not be available when a pilot is alone in the cockpit facing an emergency. The cockpit is a place of human decision-making, and this course is designed to train human pilots, not AI operators. Therefore, to ensure the highest standards of safety and professionalism, we must focus on developing your skills, not an algorithm's.

Mental Health Support Services

Support is available for any student experiencing mental health issues that are impacting their academic success. Students can either be seen at the University Counseling Center (UCC) located on the second floor of Goddard Health Center or receive 24/7/365 crisis support from a licensed mental health provider through [TimelyCare](#). To schedule an appointment or receive more information about mental health resources at OU please call the UCC at 405-325-2911 or visit [University Counseling Center](#). The UCC is located at 620 Elm Ave., Room 201, Norman, OK 73019.

Title IX Resources and Reporting Requirement

The University of Oklahoma faculty are committed to creating a safe learning environment for all members of our community, free from sex-based discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking, in accordance with Title IX. There are resources available to those impacted, including: speaking with someone confidentially about your options, medical attention, counseling, reporting, academic support, and safety plans. If you have (or someone you know has) experienced any form of sex-based discrimination or violence and wish to speak with someone confidentially, please contact [OU Advocates](#) (available 24/7 at 405-615-0013) or [University Counseling Center](#) (M-F 8 a.m. to 5 p.m. at 405-325-2911).

Because the University of Oklahoma is committed to the safety of you and other students, and because of our Title IX obligations, I, as well as other faculty, Graduate Assistants, and Teaching Assistants, are mandatory reporters. This means that we are obligated to report sex-based violence that has been disclosed to us to the Institutional Equity Office. This means that we are obligated to report sex-based violence that has been disclosed to us to the Institutional Equity Office. This includes disclosures that occur in: class discussion, writing assignments, discussion boards, emails and during Student/Office Hours. You may also choose to report directly to the Institutional Equity Office. After a report is filed, the Title IX Coordinator will reach out to provide resources, support, and information and the reported information will remain private. For more information regarding the University's Title IX Grievance procedures, reporting, or support measures, please visit [Institutional Equity Office](#) at 405-325-3546.

Adjustments for Pregnancy and Related Issues

Should you need modifications or adjustments to your course requirements because of pregnancy or a pregnancy-related condition, please request modifications via the [Institutional Equity Office](#) website or call the Institutional Equity Office at 405/325-3546 as soon as

possible. Also, see the Institutional Equity Office [FAQ on Pregnant and Parenting Students' Rights](#) for answers to commonly asked questions.

Reasonable Accommodation Policy

The University of Oklahoma (OU) is committed to the goal of achieving equal educational opportunity and full educational participation for students with disabilities. If you have already established reasonable accommodations with the Accessibility and Disability Resource Center (ADRC), please log into iAdvise to request your semester accommodations as soon as possible and contact me privately, so that we have adequate time to arrange your approved academic accommodations.

If you have not yet established services through ADRC, but have a documented disability and require accommodations, please complete [ADRC's pre-registration form](#) to begin the registration process. ADRC facilitates the interactive process that establishes reasonable accommodations for students at OU. For more information on ADRC registration procedures, please review their [website](#). You may also contact them at (405)325-3852 or adrc@ou.edu, or visit www.ou.edu/adrc for more information.

Note: disabilities may include, but are not limited to, mental health, chronic health, physical, vision, hearing, learning and attention disabilities, pregnancy-related. ADRC can also support students experiencing temporary medical conditions.

Religious Observance

It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty. [\[See Faculty Handbook 3.15.2\]](#)

Final Exam Preparation Period

Pre-finals week will be defined as the seven calendar days before the first day of finals. Faculty may cover new course material throughout this week. For specific provisions of the policy please refer to OU's [Final Exam Preparation Period policy](#).

Emergency Protocol

During an emergency, there are official university [procedures](#) that will maximize your safety.

Severe Weather: If you receive an OU Alert to seek refuge or hear a tornado siren that signals severe weather.

1. Look for severe weather refuge location maps located inside most OU buildings near the entrances.
2. Seek refuge inside a building. Do not leave one building to seek shelter in another building that you deem safer. If outside, get into the nearest building.

3. Go to the building's severe weather refuge location. If you do not know where that is, go to the lowest level possible and seek refuge in an innermost room. Avoid outside doors and windows.
4. Get in, Get Down, Cover Up
5. Wait for official notice to resume normal activities.

Additional [Weather Safety Information](#) is available through the Department of Campus Safety.

The University of Oklahoma Active Threat Guidance

The University of Oklahoma embraces a Run, Hide, Fight strategy for active threats on campus. This strategy is well known, widely accepted, and proven to save lives. To receive emergency campus alerts, be sure to update your contact information and preferences in the account settings section at one.ou.edu.

RUN: Running away from the threat is usually the best option. If it is safe to run, run as far away from the threat as possible. Call 911 when you are in a safe location and let them know from which OU campus you're calling from and location of active threat.

HIDE: If running is not practical, the next best option is to hide. Lock and barricade all doors; turn off all lights; turn down your phone's volume; search for improvised weapons; hide behind solid objects and walls; and hide yourself completely and stay quiet. Remain in place until law enforcement arrives. Be patient and remain hidden.

FIGHT: If you are unable to run or hide, the last best option is to fight. Have one or more improvised weapons with you and be prepared to attack. Attack them when they are least expecting it and hit them where it hurts most: the face (specifically eyes, nose, and ears), the throat, the diaphragm (solar plexus), and the groin.

Please save OUPD's contact information in your phone.

NORMAN campus: *For non-emergencies call (405) 325-1717. For emergencies call (405) 325-1911 or dial 911.*

TULSA campus: *For non-emergencies call (918) 660-3900. For emergencies call (918) 660-3333 or dial 911.*

Fire Alarm/General Emergency

If you receive an OU Alert that there is danger inside or near the building, or the fire alarm inside the building activates:

1. **LEAVE** the building. Do not use the elevators.
2. **KNOW** at least two building exits
3. **ASSIST** those that may need help
4. **PROCEED** to the emergency assembly area

5. *ONCE safely outside, NOTIFY first responders of anyone that may still be inside building due to mobility issues.*
6. *WAIT* for official notice before attempting to re-enter the building.

[OU Fire Safety on Campus](#)