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Flight Instructor Training

CFI Self Study Guide

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CFI Self-Study Guide

The CFI Self Study Guide will direct your learning as you progress through the online course. Complete the CFI Academics course first. You simply watch those lessons and take notes. This self-study guide begins with the Flight Instructor – 30-hour practical course. Use this guide with that course.

Each lesson will cover either a single topic or multiple topics. There will be instructions on what to READ, and in some cases complete some tasks.

Once you have completed every item in the instructions for the lesson you will then sometimes find the assessment section. In this section you will be presented with questions that you will need to record the Chapter and Page number from the FAA Handbook in which the information was found. Keep track of your scores and the missed questions so that your flight instructor can go over these with you and help you understand the missed content.

IMPORTANT: In some lessons it may not be possible to check your work as it is scenario generated. For example, if you are requested to endorse a student for solo, provide the required recommendation and endorsements for a practical test etc., there is no current way to check your work without showing it to your flight instructor. In these cases, prepare the work and save it as a pdf or paper document and bring that with you when you attend our live class or when one to one with your instructor.

- Mike Shiflett, Palo Alto, CA January 2019

Required Materials:

- Aviation Instructors Handbook (FAA-H-8083-9a)*
- Pilots Handbook of Aeronautical Knowledge (FAA-H-8083-25b)*
- Airplane Flying Handbook (FAA-H-8083-3b)*
- Current Federal Aviation Regulations and AIM (Recommend ASA FAR/AIM iPad/iPhone app)*
- Current Flight Instructor PTS and Private and Commercial Pilot ACS*

CFI Bootcamp Available Materials

- FAR Gold - FAR's explained - complete with flow charts.
- FOI Chapter Summaries - Summarizes each chapter of the Aviation Instructor's Handbook
- Ultimate Guide to Endorsements - Training requirements and endorsements together all in one place.

Fundamentals of Instruction

Human Behavior and Effective Communications

Instructions:

READ: Aviation Instructor's Handbook (AIH) – Chapter 1 and 3.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of human behavior and effective communication and how these impact effective teaching and learning.

Knowledge you Should Understand	Chapter and Page Number Where it Says So
1. The influence of personality types and their effect on the instructor- learner relationship.	
2. Human needs and their influence on motivation.	
3. Human Factors and how they positively or negatively affect learning.	
4. How to counter learner defense mechanisms.	
5. Human motivation and what affects it.	
6. Normal and abnormal emotional reactions that may be displayed by the learner.	
7. The basic elements of communication.	
8. The barriers to effective communication and how to avoid them.	
9. Effective instructional communication techniques and the consequences of poor instructional communication techniques.	

Answer the Following Questions	Your Responses
1. Give specific examples of how human needs could influence a learner's motivation.	
2. Give specific examples of how to counter defense mechanisms that a learner may use.	
3. Explain what an instructor can do to positively affect learner motivation.	
4. Explain what actions an instructor can do that will negatively affect learner motivation.	
5. Explain the normal emotional reactions that are a part of human behavior.	
6. Explain how to handle abnormal learner reactions.	
7. Explains the basic elements of communication.	
8. Give specific examples of barriers to effective communication, the consequences of them and how to avoid them.	

Fundamentals of Instruction

The Learning Process

Instructions:

READ: Chapter 2 of the Aviaton Instructor's Handbook.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of the learning process and that the applicant can apply that knowledge when performing the duties of a certificated flight instructor.

Knowledge you should understand	Chapter and Page Number Where it Says So
1. Definitions of learning and practical examples that demonstrate when learning has taken place.	
2. Various learning theories and their individual applications in flight instruction.	
3. Higher order thinking skills and their importance to pilots.	
4. Scenario-based training as it relates to learning higher order thinking skills.	
5. How learners acquire skill knowledge and how to encourage the acquisition process.	
6. Types of practice and the practical uses of each during flight training.	
7. Helping learners develop applied skills during flight training to:	
a. Incorporate multitasking.	
b. Retain focus during distractions and interruptions.	
c. Avoid fixation and inattention.	
8. How to recognize and identify learner errors during flight training.	
9. Learner motivation in the learning process and instructor responsibilities regarding motivating learners to foster learning.	
10. Learning styles and their impact on effective instruction.	
11. Learner memory, retention, forgetting and associated learning challenges, and promoting retention of information.	
12. Transfer of learning in ground, simulation, and flight instruction activities.	
13. Consequences of:	
a. Faulty instruction.	
b. Unmotivated learners.	
c. Instruction not delivered on learner's level of understanding.	
d. Failing to recognize and correct learner errors.	

Answer the Following Questions	Your Responses
How to adapt lesson delivery and/or content to account for differences in learning styles and abilities.	
How to present material in such a way as to encourage the development of higher order thinking skills.	
How to recognize and identify types and causes of learner errors during training.	
Explain the process of moving a learner through the levels of learning during a course of training.	
How to use positive motivation during instructional activities.	
Explain positive and negative transfers of learning.	
Explain the qualities of effective training scenarios.	

Fundamentals of Instruction

The Teaching Process and Teaching Methods

Instructions:

READ: Aviation Instructor's Handbook (AIH) – Chapters 4 and 6.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of the teaching process.

Knowledge you should understand	Chapter and Page Number Where it Says So
Essential teaching skills as they apply to personal strengths and weaknesses.	
Preparation of a lesson for a ground or flight instructional period.	
Various presentation methods and the ability to implement the appropriate method given the topic, learner, and available teaching aids.	
How to guide a learner through self-critique and assessment.	
Scenario-based delivery methods.	
The consequences of failing to:	
a. Be aware of human behavior.	
b. Comprehend the learning process.	
c. Use methods of communication most effective and efficient for the learner.	
d. Be flexible in the teaching process as it pertains to learner personality and learning differences.	
e. As sess and teach the "why" and the "how" behind the "what" of learner performance.	

Answer the Following Questions	Your Responses
How to use a well-rounded approach to teaching delivery methods by utilizing personal strengths while improving weaknesses.	
How to organize a lesson flow to engage the learner and make the learner an active participant in the learning process.	
How to choose a delivery method that is best suited for the learner based on an understanding of known learning tendencies.	
How to recognize if the learner has truly learned the presented material by a change in behavior or philosophy.	
How to not only assess basic topic knowledge and skill, but also the underlying causal factors and related elements, and then address them in a way the learner understands.	
How to construct a realistic scenario that is multi-faceted and integrates numerous subject areas to evaluate a learner's understanding of all content.	

Teaching Methods

Objective:

To determine that the applicant exhibits instructional competence in the elements of the various methods of teaching information and skills and applies these methods appropriately in instructional situations.

Knowledge you should understand	Chapter and Page Number Where it Says So
The different training delivery methods for ground and flight instruction by describing appropriate use of lecture, guided discussion, problem-based learning (including scenario based training, collaborative problem solving, and case study), electronic- based learning, cooperative or group learning, and demonstration-performance.	
Why it may be appropriate to incorporate more than one delivery method in an instructional session.	
How the organization of teaching materials may affect learner learning.	
The use of proper and correct source materials and the positive/negative value of developing supplementary material when preparing lessons.	
The use of instructional aids and training technologies appropriate to each method.	

Prepare the Following	Indicate when Done Here
1. Prepare a plan of action to incorporate appropriate teaching methods and supporting materials for an assigned ACS task applicable to the instructor-applicant's certificate level, for the following situations:	
a. Aeronautical knowledge ground lesson applicable for a classroom.	
b. Maneuver ground lesson for an individual pilot in training.	
c. Maneuver introduction for a flight lesson.	
2. Utilize materials developed in lesson preparation to demonstrate and teach information and skills to the evaluator.	

Fundamentals of Instruction

Assessment

Instructions:

READ: Aviation Instructor's Handbook (AIH) – Chapter 5.

Assessment:

Objective:

To determine that the applicant exhibits satisfactory knowledge and skills associated with instructional assessment.

Knowledge you should understand	Chapter and Page Number Where it Says So
1. The purpose and characteristics of an effective critique.	
2. Different methods of conducting a critique.	
3. "Ground rules" for conducting a critique.	
4. Assessment techniques that ensure the learner can properly apply the material or procedure that was presented.	
5. How to review and evaluate learner performance.	
6. Traditional assessment vs. authentic assessment.	
7. Characteristics of effective oral questions.	
8. Oral questions to be avoided.	
9. How to respond to learner questions.	
10. Characteristics of effective written tests.	
11. How to develop effective written tests.	
12. Characteristics and uses of performance tests.	
13. Principles of collaborative assessment (or learner-centered grading (LCG)).	
14. The consequences of:	
a. Ineffective critiques.	
b. Improper timing of critiques.	
c. Improper venue for conducting critiques.	
d. Use of improper types of questioning/tests.	
e. Improper answers to learner questions.	

Answer the Following Questions	Your Responses
1. How to conduct an effective learner-centered critique.	
2. How to apply different techniques for critiquing.	
3. What are the "ground rules" for conducting a critique.	
4. What is effective oral questioning.	
5. How should you respond to learner questioning.	
6. How do you create an effective written test.	
7. How to select the appropriate method of assessment.	
8. How to differentiate between different testing techniques to obtain a given result.	
9. When to use a collaborative assessment.	

Fundamentals of Instruction

Flight Instructor Characteristics and Responsibilities

Instructions:

READ: Aviation Instructor's Handbook (AIH) – Chapters 7 and 8.

Assessment:

Objective:

To determine that the applicant fully comprehends the flight instructor's responsibilities and exhibits the professional characteristics associated with effective instruction.

Answer the Following Questions	Your Responses
1. Provide effective instruction and help learners gain Knowledge and skill	
2. Emphasize the positive.	
3. Be prepared for each instructional activity and make learners' best interest their top priority.	
4. Prepare pilots in training to exceed the published minimum standards of performance.	
5. Incorporate the highest standard of safe operations and risk management in all instructional and student pilot solo.	
6. Evaluate the learner's piloting ability.	
7. Supervise student pilot solo activity.	
8. Prepare pilots they are training to become responsible members of the aviation community and to exercise effective aeronautical decision making, risk management, situational awareness and SRM when using their privileges as pilot in command	
9. Minimize learner frustrations.	
10. Recommend applicants for knowledge and practical test.	
11. Conduct specialized training, evaluate proficiency, and grant privileges through endorsements as authorized by regulations.	
12. Maintain and advance personal professional knowledge and skills.	
13. Identify and appropriately deal with seriously abnormal learners.	
14. Develop an adaptable plan of action with appropriate scenario(s).	
15. Exhibit the characteristics of a professional flight	

Answer the Following Questions	Your Responses
1. How to recognize the differences between individual learners and adapt instruction that helps each to learn.	
2. How to clearly define objectives, standards and assessment methods.	
3. How to evaluate performance against standards.	
4. How to effectively and constructively critique learners' performance.	
5. How to instill aeronautical decision making, risk management, situational awareness and SRM habits that progressively grow and transfer to the pilot in training.	
6. How to instill in the pilot in training a sense of personal responsibility for the aviation community, their passengers and persons and property on the ground.	
7. What it means to exhibit the highest standards of safe operations and risk management in all instructional activities.	
8. How to use a plan of action.	

National Airspace System

Airspace

Instructions:

READ: PHAK – Chapter 15

Assessment:

Objective:

To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with the National Airspace System (NAS) operating under VFR as a commercial pilot.

Knowledge you should understand	Where it Says So
1. Types of airspace/airspace classes and associated requirements and limitations.	
2. Charting symbology.	
3. SUA, special flight rules areas (SFRA), temporary flight restrictions (TFR), and other airspace areas.	

Answer the Following Questions	Your Responses
Explain the requirements for basic VFR weather minimums and flying in particular classes of airspace, to include SUA, SFRA, and TFR.	
Correctly identify airspace and operate in accordance with associated communication and equipment requirements.	Practice with someone or save this until you do one to one instruction

Principles of Flight

Aerodynamics of Flight Control Systems

Instructions:

READ: PHAK – Chapters 3,4, 5 and 6

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in, and has the ability to understand the elements of aerodynamics.

Knowledge you should understand	Where it Says So – Chapter and Page
1. Airfoil design characteristics.	
2. Airplane stability, maneuverability and controllability.	
3. Turning tendency (e.g., torque, p-factor, spiraling slipstream, and gyroscopic precession).	
4. Forces acting on an airplane.	
5. Load factors in airplane design.	
6. Wingtip vortices and precautions to be taken.	
7. The risk to pilots of not understanding the basic aerodynamic principles of flight.	

Knowledge you should understand	Where it Says So – Chapter and Page
1. Effectively deliver pilot-oriented instruction to a friend or fellow pilot (simulated pilot in training) on the following topics:	
A. Airfoil design characteristics.	
B. Airplane stability, maneuverability and controllabililty.	
C. Turning tendency (e.g., torque, p-factor, spiraling, slipstream, and gyroscopic precession.)	
D. Forces acting on an airplane.	
E. Load Factor.	
F. Wingtip vortices: source and impact.	

Federal Aviation Regulations

General and Aircraft ratings and Pilot Authorizations

Instructions:

READ: FAR Part 1, FAR Part 61 from 61.1 to 61.57

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements and has the ability to effectively teach the appropriate aspects of FAR 1 and FAR 61 Subparts A and B.

Completion Standards

You should be able to use both the concise and FARs Explained document to solve questions posed by your flight instructor during the flight portion of your training.

Logbook Entries and Certificate Endorsements

From Flight Reviews, Aircraft Endorsements, and Solo to Commercial Pilots – Tools of the Trade

Instructions:

READ: FAR 61.31, 61.51, 61.56, 61.87, 61.93, 61.96, 61.97, 61.98, 61.99, 61.101, 61.103, 61.105, 61.109, 61.123, 61.125, 61.129

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements and has the ability to effectively teach the appropriate aspects of logbook entries and certificates endorsements.

Knowledge you should understand	Where it Says So – Chapter and Page or FAR
1. Required logbook entries for instruction given.	
2. Required student pilot certificate endorsements and appropriate logbook entries for solo and cross-country flights including flights within 25nm.	
3. Other required pilot logbook endorsements (e.g., tailwheel, high performance).	
4. Preparation of a recommendation for a pilot practical test, including appropriate logbook entry and electronic forms for:	
a. Initial pilot certification.	
b. Additional pilot certification.	
c. Additional aircraft qualification.	
5. Required endorsement of a pilot logbook for the satisfactory completion of the required FAA flight review.	
6. Required flight instructor records.	

Prepare the Following	Indicate when Done Here
1. Prepare simulated logbook entries and/or certificate endorsements required for at least two of the following scenarios:	
a. Student pilot first solo.	
b. First lesson with student pilot introducing straight and level, level turns, descents and climbs.	
c. Recommendation for knowledge test.	
d. Recommendation for practical test.	
e. Satisfactory flight review.	

14 CFR and Publication

FAR's and Publications

Instructions:

COMPLETE: Visit FAA.GOV and search for Advisory Circulars that are contained within the reference sections of the PTS for Flight Instructor, Commercial and Private ACS. If you are able, download those as PDFs for later use.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in and has the ability to effectively teach the appropriate elements of the Federal Aviation Regulations and essential publications.

Describe and explain the purpose, how to access, how to determine currency, and general content category of:

Knowledge you should understand	Where it Says So – Location, Page, FAR, Etc.
1. 14 CFR parts 1, 61, and 91.	
2. NTSB part 830.	
3. Advisory Circulars.	
4. Airman Certification Standards.	
5. Pilot's Operating Handbooks or FAA-approved airplane flight manuals.	
6. Flight information publications.	

Present the lesson below to someone	Your Results from doing it
1. Deliver instruction to a simulated pilot in Training or friend on what a pilot needs to know about the following:	
a. 14 CFR parts 1, 61, and 91.	
b. NTSB part 830.	
c. Advisory Circulars.	
d. Airman Certification Standards.	
e. Pilot's Operating Handbooks (POH)/FAA approved Airplane Flight Manuals (AFM).	
f. Flight information publications (e.g., Aeronautical Information Manual) (AIM) and Airport and Chart Supplements	

Aeromedical Factors

Health and Flying

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapter 17.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements Aeromedical Factors by understanding the causes, symptoms and corrective actions of the Aeromedical factors contained in the Flight Instructor PTS and Private and Commercial Pilot ACS.

Knowledge you should understand	Where it Says So – Location, Page, FAR, Etc.
Symptoms, recognition, causes, effects, and corrective actions associated with aeromedical and physiological issues including:	
a. Hypoxia	
b. Hyperventilation	
c. Middle ear and sinus problems	
d. Spatial disorientation	
e. Motion sickness	
f. Carbon monoxide poisoning	
g. Stress and fatigue	
h. Dehydration and nutrition	
i. Hypothermia	
j. Optical illusions	
k. Dissolved nitrogen in the bloodstream after scuba dives	
Regulations regarding use of alcohol and drugs.	
Effects of alcohol, drugs, and over-the-counter medications.	
Aeronautical Decision-Making (ADM).	

Visual Scanning and Collision Avoidance

Keeping clear of other traffic

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapter 17 Pages 6 – 10 and Pages 19 – 22, Airplane Flying Handbook (AFH) Chapter 1 Pages 11 – 12, AC 90-48D.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of Visual Scanning and Collision Avoidance.

This task will be evaluated by your flight instructor by oral quizzing at a later date.

Knowledge you should understand	Where it Says So – Location, Page, FAR, Etc.
1. Relationship between a pilot's physical condition and vision.	
2. Environmental conditions that degrade vision.	
3. Vestibular and visual illusions.	
4. "See and avoid" concept.	
5. Proper visual scanning procedure.	
6. Relationship between poor visual scanning habits and increased collision risk.	
7. Proper clearing procedures.	
8. Importance of knowing aircraft blind spots.	
9. Relationship between aircraft speed differential and collision risk.	

Completion Standards

Complete the table in the assessment section of this lesson. Review this with your flight instructor at a later date.

Certificates and Documents Including Airworthiness Requirements

The requirements to fly and documents that must be onboard an airplane

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapter 9 Pages 9-6 to end

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of certificates and documents as outlined in the Flight Instructor PTS and Private and Commercial Pilot ACS.

Knowledge you should understand	Where it Says So – Location, Page, FAR, Etc.
1. The training requirements for the issuance of a recreational, private, and commercial pilot certificate.	
2. The privileges and limitations of pilot certificates and ratings at sport, recreational, private, and commercial levels.	
3. Class and duration of medical certificates.	
4. Recent pilot flight experience requirements.	
5. Required entries in pilot logbook or flight record.	
6. Certificates and documents used to determine whether an airplane meets airworthiness requirements.	
Develop scenarios for:	Record your Responses Here
1. Meeting minimum training requirements for a sport, recreational, private, or commercial pilot certificate application.	
2. Acting as pilot-in-command without passengers.	
3. Acting as pilot-in-command with passengers.	

Night Operations

Understanding the differences between day and night flying

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapter 14 Pages 16 – 19, Chapter 17 Pages 22 – 28, Airplane Flying Handbook (AFH) Chapter 10.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of Night Operations as outlined in the Flight Instructor PTS and Private Pilot ACS.

Knowledge you should understand	Where it Says So – Location, Page, FAR, Etc.
1. Physiological aspects of night flying as it relates to vision.	
2. Lighting systems identifying airports, runways, taxiways and obstructions, as well as pilot-controlled lighting.	
3. Airplane equipment and lighting requirements for night operations.	
4. Personal equipment essential for night flight.	
5. Night orientation, navigation, and chart reading techniques.	

Risks you should understand	How would you mitigate this risk?
Collision hazards, to include aircraft, terrain, obstacles and wires.	
Distractions, loss of situational awareness, and/or improper task management.	
Hazards specific to night flying.	

Performance and Limitations

Understanding performance concepts and calculations

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapters 10 and 11 NOTE: Read only those sections that apply to Single Engine Airplanes)

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of Performance and Limitations s as outlined in the Flight Instructor PTS and Commercial Pilot ACS.

Knowledge you should understand	Where it Says So – Location, Page, FAR, Etc.
Factors affecting performance, to include:	
a. Atmospheric conditions	
b. Pilot technique	
c. Aircraft condition	
d. Airport environment	
e. Loading	
f. Weight and balance	
Aerodynamics.	

Risks you should understand	How would you mitigate this risk?
Inaccurate use of appropriate manufacturer's performance charts, tables, and data.	
Exceeding aircraft limitations.	
Possible differences between actual aircraft performance and published aircraft performance data.	

Prepare the following	Record your results
Compute the weight and balance, correct out-of-center of gravity (CG) loading errors and determine if the weight and balance remains within limits during all phases of flight. Conditions: Piper Arrow II document in the class resources under POHs Pilot and Front Passenger: 375 Rear Passengers: 375 Baggage in Area 1: 85 Fuel: Determine maximum we can carry	
Demonstrate use of the appropriate aircraft manufacturer's approved performance charts, tables, and data.	DONE BY DOING THE PREVIOUS TASK

Operation of System

Understanding aircraft systems

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapters 7 and 8 NOTE: Read only those sections that apply to Single Engine Airplanes), Read the systems description and emergency checklist for the Arrow II in the POH.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of Operation of Systems as outlined in the Flight Instructor PTS and Commercial Pilot ACS.

Knowledge you should understand	Where it Says So – Location, Page, FAR, Etc.
Aircraft systems, to include:	
a. Primary flight controls and trim	
b. Secondary flight controls	
c. Powerplant and propeller	
d. Landing gear	
e. Fuel, oil, and hydraulic	
f. Electrical	
g. Avionics	
h. Pitot-static, vacuum/pressure and associated flight instruments	
i. Environmental	
j. Deicing and anti-icing	
k. Water rudders (ASES, AMES)	

L. Oxygen system	
M. Indications of system abnormalities or failures.	

Risks you should understand	How would you mitigate this risk?
Failure to identify system malfunctions or failures.	
Improper handling of a system failure.	
Failure to monitor and manage automated systems.	

Skills you should be able to perform

Explain and operate the airplane's systems.
Properly use appropriate checklists.

High Altitude Operations - Oxygen

Supplemental oxygen systems

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapters 7 pages 37 – 39, AC 61-107B (NOTE: Familiarize yourself with this document and contents).

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of High Altitude Operations – Supplemental Oxygen as outlined in the Flight Instructor PTS and Commercial Pilot ACS.

Knowledge you should understand	Where it Says So – Location, Page, FAR, Etc.
1. Regulatory requirements for supplemental oxygen use by flight crew and passengers.	
2. Physiological factors, to include:	
a. Impairment	
b. Symptoms of hypoxia	
c. Time of useful consciousness (TUC)	
3. Operational factors, to include:	
a. Characteristics, limitations, and applicability of continuous flow, demand, and pressure-demand oxygen system	
b. Differences between and identification of "aviator's breathing oxygen" and other types of oxygen	
c. Necessary precautions when using supplemental oxygen systems	

Risks you should understand	How would you mitigate this risk?
High altitude flight.	
Failure to use supplemental oxygen.	
Management of compressed gas containers.	
Combustion hazards in an oxygen-rich environment.	

Skills you should be able to perform
Determine the quantity of supplemental oxygen required in a scenario
Describe how to operate the installed or portable oxygen equipment in the aircraft
Brief passengers on use of supplemental oxygen equipment in a scenario

High Altitude Operations - Oxygen

Operating pressurized aircraft

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapters 7 pages 34 – 36, AC 61-107B (NOTE: Familiarize yourself with this document and contents).

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of High Altitude Operations – Pressurization Systems as outlined in the Flight Instructor PTS and Commercial Pilot ACS.

Knowledge you should understand	Where it Says So – Location, Page, FAR, Etc.
Fundamental concepts of aircraft pressurization system, to include failure modes.	
Physiological factors, to include:	
a. Impairment	
b. Symptoms of hypoxia	
c. TUC	

Risks you should understand	How would you mitigate this risk?
High altitude flight.	
Failure or malfunction of pressurization system, if equipment is installed.	

Navigation and Flight Planning

Cross-country flight planning

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapter 16 to page 21

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of Navigation and Flight Planning as outlined in the Flight Instructor PTS and Cross-Country Flight Planning as outlined in the Commercial Pilot ACS.

Knowledge you should understand	Where it Says How – Location, Page, etc.
Route planning, including consideration of different classes and special use airspace (SUA) and selection of appropriate navigation/communication systems and facilities.	
Altitude selection accounting for terrain and obstacles, glide distance of aircraft, VFR cruising altitudes, and the effect of wind.	
Calculating:	
a. Time, climb and descent rates, course, distance, heading, true airspeed and groundspeed	
b. Estimated time of arrival to include conversion to universal coordinated time (UTC)	
c. Fuel requirements, to include reserve	
Elements of a VFR flight plan.	
Procedures for activating and closing a VFR flight plan.	

Risks you should understand	How would you mitigate this risk?
Pilot.	
Aircraft.	
Environment (e.g., weather, airports, airspace, terrain, obstacles).	
External pressures.	
Limitations of air traffic control (ATC) services.	
Improper fuel planning.	

Skills you should be able to perform
Prepare, present and explain a cross-country flight plan assigned by the evaluator including a risk analysis based on real time weather, to the first fuel stop.
Apply pertinent information from appropriate and current aeronautical charts, chart supplements; Notices to Airman (NOTAMs) relative to airport, runway and taxiway closures; and other flight publications.
Create a navigation log and simulate filing a VFR flight plan.
Recalculate fuel reserves based on a scenario provided by your flight instructor.

Completion Standards

You should be able to plan a cross-country flight with both paper and electronic methods. Your flight instructor will evaluate and assess your abilities to do this at a later date.

Navigation and Radar Services

Ground and satellite based radio navigation

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapter 16 page 21 until the end of the chapter.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of Navigation and Radar Services as outlined in the Flight Instructor PTS and Commercial Pilot ACS.

Knowledge you should understand	Where it Says so – Location, Page, etc.
Ground-based navigation (orientation, course determination, equipment, tests, and regulations).	
Satellite-based navigation (e.g. equipment, regulations, authorized use of databases, and Receiver Autonomous Integrity Monitoring (RAIM)).	
Radar assistance to VFR aircraft (e.g. operations, equipment, available services, traffic advisories).	
Transponder (Mode(s) A, C, and S).	

Risks you should understand	How would you mitigate this risk?
Failure to manage automated navigation and auto flight systems.	
Distractions, loss of situational awareness, and/or improper task management.	
Limitations of the navigation system in use.	
Loss of a navigation signal.	

Skills you should be able to perform

Use an airborne electronic navigation system.
Determine the airplane's position using the navigation system.
Intercept and track a given course, radial, or bearing.
Recognize and describe the indication of station or waypoint passage, if appropriate.
Recognize signal loss and take appropriate action, if applicable.
Use proper communication procedures when utilizing radar services.
Maintain the appropriate altitude, ±100 feet and headings ±10°.

Completion Standards

You should be able to integrate radio navigation into a paper or electronically generated cross-country flight plan. Your flight instructor will evaluate and assess your abilities to do this at a later date.

Runway Incursion Avoidance

Airport signs and markings

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (PHAK) – Chapter 14, AC 91-73B.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of Runway Incursion Avoidance as outlined in the Flight Instructor PTS and Commercial Pilot ACS.

Completion Standards

You should be able to identify the key points of avoiding a runway incursion according the AC 91-73B. Your flight instructor will evaluate and assess your abilities to do this at a later date.

ADM and Risk Management

Practical risk management for pilots

Instructions:

READ: Aviation Instructors Handbook (FAA-H-8083-9A) – Chapter 9.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of Aeronautical Decision Making and Risk Management as outlined in the Flight Instructor PTS and Commercial Pilot ACS.

Completion Standards

You should be able to identify the key points of Risk Management including the PAVE, CARE, DECIDE, 3P, and 5P models. You will also be able to list and define the 5 hazardous attitudes and their antidotes. Your flight instructor will evaluate and assess your abilities to do this at a later date.

Creating a Lesson Plan

The steps and format for creating a lesson plan for aviation

Instructions:

READ: Aviation Instructors Handbook (FAA-H-8083-9A) – Chapter 4 pages 4 to 8 up to but not including Presentation of a lesson, Chapter 6 pages 6 to 10.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of creating a lesson plan as outlined in the Flight Instructor PTS.

Completion Standards

You should be able to create a lesson plan. Your flight instructor will evaluate and assess your abilities to do this at a later date.

Creating a Lesson Plan

The preparation of a specific lesson plan and its delivery

Instructions:

READ: Aviation Instructors Handbook (FAA-H-8083-9A) – Chapter 4 pages 8 to 10 up to but not including Training Delivery Methods.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements creating and presenting a lesson plan to be used for a preflight lesson on a maneuver to be used in flight.

Completion Standards

You should be able to create a lesson plan. Your flight instructor will evaluate and assess your abilities to do this at a later date.

Weather Information

Getting a weather briefing, and identification of hazards to make a go/no-go decision

Instructions:

READ: Pilots Handbook of Aeronautical Knowledge (FAA-H-8083-25b) – Chapter 13

PREPARE: A weather briefing on a cross-country flight of your choice. Try to use the radar data and identify an area that has some weather. Download as many of the charts listed in Chapter 13 as possible. Annotate the charts with weather hazards for this specific flight. Make a go/no-go decision on your ability to perform the flight in VFR conditions.

Assessment:

Objective:

To determine that the applicant exhibits instructional competence in the elements of obtaining a weather briefing, interpreting the charts and forecasts and the ability to identify hazards and make a competent go/no-go decision.

Completion Standards

You should be able to get a weather briefing, interpret weather charts and forecasts, identify any hazards to flight and make a competent go/no-go decision. Save this data and give it to your flight instructor to evaluate and assess your abilities to do this.