



U.S. Department
of Transportation

**Federal Aviation
Administration**

Flight Instructor for Airplane Category Airman Certification Standards

November 2023

Flight Standards Service
Washington, DC 20591

Area of Operation I. Fundamentals of Instructing

Note: The evaluator must select Task E, Task F, and at least one other Task for initial flight instructor applicants. During a practical test for an added flight instructor rating or flight instructor reinstatement, the evaluator has discretion to evaluate the applicant on Fundamentals of Instructing.

Task A. Effects of Human Behavior and Communication on the Learning Process

References: FAA-H-8083-2, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands human behavior and effective communication, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge:	The applicant understands and explains:
<i>FI.I.A.K1</i>	Elements of human behavior, including:
<i>FI.I.A.K1a</i>	a. Definitions of human behavior
<i>FI.I.A.K1b</i>	b. Instructor and learner relationship
<i>FI.I.A.K1c</i>	c. Motivation
<i>FI.I.A.K1d</i>	d. Human needs
<i>FI.I.A.K1e</i>	e. Defense mechanisms
<i>FI.I.A.K2</i>	Learner emotional reactions, including:
<i>FI.I.A.K2a</i>	a. Anxiety and stress
<i>FI.I.A.K2b</i>	b. Impatience
<i>FI.I.A.K2c</i>	c. Worry or lack of interest
<i>FI.I.A.K2d</i>	d. Physical discomfort, illness, fatigue, and dehydration
<i>FI.I.A.K2e</i>	e. Apathy due to inadequate instruction
<i>FI.I.A.K3</i>	Teaching the adult learner.
<i>FI.I.A.K4</i>	Effective communication, including:
<i>FI.I.A.K4a</i>	a. Basic elements of communication
<i>FI.I.A.K4b</i>	b. Barriers to effective communication
<i>FI.I.A.K4c</i>	c. Developing communication skills

Risk

Management: The applicant is able to identify, assess, and mitigate risk associated with:

<i>FI.I.A.R1</i>	Recognizing and accommodating human behavior.
<i>FI.I.A.R2</i>	Barriers to communication.

Skills: The applicant exhibits the skill to:

<i>FI.I.A.S1</i>	Give examples of how human behavior affects motivation and learning.
<i>FI.I.A.S2</i>	Describe what the instructor can do to deal with:
<i>FI.I.A.S2a</i>	a. Serious abnormal emotional behavior

- FI.I.A.S2b b. Defense mechanisms
- FI.I.A.S3 Use effective communication in ground and flight instruction.

Task B. Learning Process

References: FAA-H-8083-2, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands the learning process, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

- Knowledge:** The applicant understands and explains:
- FI.I.B.K1 Definitions of learning.
 - FI.I.B.K2 Learning theory as it applies to ground and flight instruction, including:
 - FI.I.B.K2a a. Behaviorism
 - FI.I.B.K2b b. Cognitive Theory
 - FI.I.B.K3 Perceptions and insight.
 - FI.I.B.K4 Acquiring knowledge.
 - FI.I.B.K5 Laws of learning.
 - FI.I.B.K6 Domains of learning, including:
 - FI.I.B.K6a a. Cognitive
 - FI.I.B.K6b b. Affective
 - FI.I.B.K6c c. Psychomotor
 - FI.I.B.K7 Characteristics of learning.
 - FI.I.B.K8 Scenario-based training (SBT).
 - FI.I.B.K9 Acquiring skill knowledge, including:
 - FI.I.B.K9a a. Stages
 - FI.I.B.K9b b. Knowledge of results
 - FI.I.B.K9c c. How to develop skills
 - FI.I.B.K9d d. Learning plateaus
 - FI.I.B.K10 Types of practice.
 - FI.I.B.K11 Evaluation versus critique.
 - FI.I.B.K12 Distractions, interruptions, fixation, and inattention.
 - FI.I.B.K13 Errors.
 - FI.I.B.K14 Memory, including:
 - FI.I.B.K14a a. Sensory
 - FI.I.B.K14b b. Short-Term Memory (STM) and Long-Term Memory (LTM)

- FI.I.B.K14c c. How usage affects memory
- FI.I.B.K14d d. Forgetting
- FI.I.B.K15 Retention of learning.
- FI.I.B.K16 Transfer of learning.

Risk

Management: The applicant is able to identify, assess, and mitigate risk associated with:

- FI.I.B.R1 Inadequate or incomplete instruction.
- FI.I.B.R2 Lack of learner motivation.
- FI.I.B.R3 Recognizing and correcting learner errors.

Skills: The applicant exhibits the skill to:

- FI.I.B.S1 Apply educational theories to ground and flight instruction.
- FI.I.B.S2 Recognize and correct conditions that undermine the learning process.
- FI.I.B.S3 Plan for and use techniques, including realistic distractions that teach flight students how to manage a workload.

Task C. Course Development, Lesson Plans, and Classroom Training Techniques

References: FAA-H-8083-2, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands the teaching process, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge: The applicant understands and explains:

- FI.I.C.K1 Teaching, including:
 - FI.I.C.K1a a. Process
 - FI.I.C.K1b b. Essential skills
- FI.I.C.K2 Course of training.
- FI.I.C.K3 Preparation of a lesson, including:
 - FI.I.C.K3a a. Training objectives and completion standards
 - FI.I.C.K3b b. Performance-based objectives
 - FI.I.C.K3c c. Importance of Airman Certification Standards (ACS) in aviation training curricula
 - FI.I.C.K3d d. Decision-based objectives
- FI.I.C.K4 Organization of material.
- FI.I.C.K5 Training delivery methods, including:
 - FI.I.C.K5a a. Lecture
 - FI.I.C.K5b b. Discussion
 - FI.I.C.K5c c. Guided discussion

- FI.I.C.K5d* d. Cooperative or group learning
- FI.I.C.K5e* e. Demonstration-performance
- FI.I.C.K5f* f. Drill and practice
- FI.I.C.K6* Electronic learning (e-Learning).
- FI.I.C.K7* Instructional aids and training technologies, including:
 - FI.I.C.K7a* a. Characteristics of effective instructional aids
 - FI.I.C.K7b* b. Reasons for use
 - FI.I.C.K7c* c. Guidelines for use
 - FI.I.C.K7d* d. Types
- FI.I.C.K8* Integrated flight instruction.
- FI.I.C.K9* Problem-based instruction.
- FI.I.C.K10* Planning instructional activity, including:
 - FI.I.C.K10a* a. Blocks of learning
 - FI.I.C.K10b* b. Training syllabus
 - FI.I.C.K10c* c. Lesson plans

Risk

Management: The applicant is able to identify, assess, and mitigate risk associated with:

- FI.I.C.R1* Selection of teaching method.

Skills: The applicant exhibits the skill to:

- FI.I.C.S1* Prepare an instructional lesson plan using teaching methods and materials appropriate for Task and learner characteristics, including:
 - FI.I.C.S1a* a. Aeronautical knowledge ground lesson applicable for a classroom
 - FI.I.C.S1b* b. Maneuver introduction and ground lesson

Task D. Student Evaluation, Assessment, and Testing

References: FAA-H-8083-2, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands evaluation and testing, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge: The applicant understands and explains:

- FI.I.D.K1* Purpose and characteristics of effective assessment.
- FI.I.D.K2* Traditional assessments.
- FI.I.D.K3* Authentic assessments, including:
 - FI.I.D.K3a* a. Learner-centered assessment
 - FI.I.D.K3b* b. Maneuver or procedure grades

- FI.I.D.K3c c. Assessing risk management skills
- FI.I.D.K4 Choosing an effective assessment method.
- FI.I.D.K5 Purposes and types of critiques.
- FI.I.D.K6 Oral assessment, including:
 - FI.I.D.K6a a. Characteristics of effective questions
 - FI.I.D.K6b b. Types of questions to avoid
 - FI.I.D.K6c c. Answering learner questions
- FI.I.D.K7 Assessment of piloting ability.

Risk

Management: The applicant is able to identify, assess, and mitigate risk associated with:

- FI.I.D.R1 Delivering an assessment.

Skills: The applicant exhibits the skill to:

- FI.I.D.S1 Use appropriate methods and techniques to assess learner performance in ground or flight training.

Task E. Elements of Effective Teaching in a Professional Environment

References: FAA-H-8083-2, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands effects of instructor behavior on effective teaching, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge: The applicant demonstrates understanding of:

- FI.I.E.K1 Aviation instructor responsibilities, including:
 - FI.I.E.K1a a. Helping learners
 - FI.I.E.K1b b. Providing adequate instruction
 - FI.I.E.K1c c. Training to established standards of performance
 - FI.I.E.K1d d. Emphasizing the positive
 - FI.I.E.K1e e. Minimizing learner frustrations
- FI.I.E.K2 Flight instructor responsibilities, including supervision and surveillance during training.
- FI.I.E.K3 Flight instructor qualifications and professionalism.
- FI.I.E.K4 Professional development.
- FI.I.E.K5 Instructor ethics and conduct.

Risk

Management: The applicant is able to identify, assess, and mitigate risk associated with:

- FI.I.E.R1 Fulfilling instructor responsibilities.
- FI.I.E.R2 Exhibiting professionalism.

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- Skills:** The applicant exhibits the skill to:
- FI.I.E.S1* Deliver ground or flight instruction on an evaluator-assigned Task in a manner consistent with instructor responsibilities and professional characteristics as stated in K1 through K5.

Task F. Elements of Effective Teaching that Include Risk Management and Accident Prevention

References: FAA-H-8083-2, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands teaching practical risk management, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

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- Knowledge:** The applicant understands and explains:
- FI.I.F.K1* Teaching risk identification, assessment, and mitigation.
 - FI.I.F.K2* Teaching risk management tools, including:
 - FI.I.F.K2a* a. Pilot/Aircraft/enVironment/External Pressures (PAVE) checklist
 - FI.I.F.K2b* b. Flight Risk Assessment Tools (FRATs)
 - FI.I.F.K3* When and how to introduce risk management.
 - FI.I.F.K4* Risk management teaching techniques by phase of instruction.
 - FI.I.F.K5* Managing risk during flight instruction, including:
 - FI.I.F.K5a* a. Common flight instruction risks
 - FI.I.F.K5b* b. Best practices
 - FI.I.F.K5c* c. Special considerations while teaching takeoffs and landings
 - FI.I.F.K6* Aeronautical Decision-Making (ADM) to include using Crew Resource Management (CRM) or Single-Pilot Resource Management (SRM), as appropriate.

Risk

Management: The applicant is able to identify, assess, and mitigate risk associated with:

- FI.I.F.R1* Hazards associated with providing flight instruction.
- FI.I.F.R2* Obstacles to maintaining situational awareness during flight instruction.
- FI.I.F.R3* Recognizing and managing hazards arising from human behavior, including hazardous attitudes.

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- Skills:** The applicant exhibits the skill to:
- FI.I.F.S1* Use scenario-based training (SBT) to demonstrate, teach, and assess risk management and Aeronautical Decision-Making (ADM) skills in the context of a Task specified by the evaluator.
 - FI.I.F.S2* Identify, assess, and mitigate risks commonly associated with flight instruction by maintaining:
 - FI.I.F.S2a* a. Awareness and oversight of the learner's actions, with timely and appropriate supervision, intervention, or mitigation as needed
 - FI.I.F.S2b* b. Awareness of the learner's cognitive/physiological state, with timely action to mitigate anxiety, fatigue, or other obstruction to learning
 - FI.I.F.S2c* c. Overall situational awareness of the aircraft's dynamic state, its position in space, and vigilance for unexpected events or changing circumstances that occur in the environment

- FI.I.F.S3* Model and teach safety practices, including maintaining:
- FI.I.F.S3a* a. Collision avoidance while simultaneously providing instruction
- FI.I.F.S3b* b. Avoidance of unnecessary distractions
- FI.I.F.S3c* c. Coordinated flight
- FI.I.F.S3d* d. Awareness of who is manipulating controls through positive exchange of flight controls
- FI.I.F.S3e* e. Continuous awareness of the aircraft's dynamic state and position in the NAS

Area of Operation II. Technical Subject Areas

Note: The evaluator must select Tasks C, K, and at least one other Task from this Area of Operation. The evaluator must also select Task P for multiengine applicants.

Task A. Human Factors

References: AIM; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands personal health, flight physiology, aeromedical and human factors, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge:	The applicant demonstrates instructional knowledge by describing and explaining:
AI.II.A.K1	Symptoms, recognition, causes, effects, and corrective actions associated with aeromedical and physiological issues, including:
AI.II.A.K1a	a. Hypoxia
AI.II.A.K1b	b. Hyperventilation
AI.II.A.K1c	c. Middle ear and sinus problems
AI.II.A.K1d	d. Spatial disorientation
AI.II.A.K1e	e. Motion sickness
AI.II.A.K1f	f. Carbon monoxide poisoning
AI.II.A.K1g	g. Stress
AI.II.A.K1h	h. Fatigue
AI.II.A.K1i	i. Dehydration and nutrition
AI.II.A.K1j	j. Hypothermia
AI.II.A.K1k	k. Optical illusions
AI.II.A.K1l	l. Dissolved nitrogen in the bloodstream after scuba dives
AI.II.A.K2	Regulations regarding use of alcohol and drugs.
AI.II.A.K3	Effects of alcohol, drugs, and over-the-counter medications.
AI.II.A.K4	Aeronautical Decision-Making (ADM) to include using Crew Resource Management (CRM) or Single-Pilot Resource Management (SRM), as appropriate.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

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|------------|--|
| AI.II.A.R1 | Aeromedical and physiological issues. |
| AI.II.A.R2 | Hazardous attitudes. |
| AI.II.A.R3 | Distractions, task prioritization, loss of situational awareness, or disorientation. |
| AI.II.A.R4 | Confirmation and expectation bias. |

Skills: The applicant demonstrates and simultaneously explains how to:

Area of Operation II. Technical Subject Areas

- AI.II.A.S1* Associate the symptoms and effects for at least three of the conditions listed in K1a through K1I with the cause(s) and corrective action(s).
- AI.II.A.S2* Perform self-assessment, including fitness for flight and personal minimums, for actual flight or a scenario given by the evaluator.

Task B. Visual Scanning and Collision Avoidance

References: AC 90-48; AIM; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands visual scanning and collision avoidance, can apply that knowledge, manage associated risks, demonstrate pilot-in-command skills, and provide effective instruction.

Knowledge: The applicant demonstrates instructional knowledge by describing and explaining:

- AI.II.B.K1* Environmental conditions that degrade vision.
- AI.II.B.K2* Vestibular and visual illusions.
- AI.II.B.K3* "See and Avoid" responsibilities.
- AI.II.B.K4* Visual scanning procedure and the importance of peripheral vision.
- AI.II.B.K5* Aircraft blind spots and clearing procedures.
- AI.II.B.K6* Visual cues of an impending mid-air collision.
- AI.II.B.K7* Situations that create the greatest collision risk.
- AI.II.B.K8* Division of attention inside and outside the aircraft.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

- AI.II.B.R1* Distractions to visual scanning.
- AI.II.B.R2* Relaxed intermediate focal distance.
- AI.II.B.R3* High volume operational environments.
- AI.II.B.R4* Collision reaction time.
- AI.II.B.R5* Use of a safety pilot.

Skills: The applicant demonstrates and simultaneously explains how to:

- AI.II.B.S1* Effectively scan using short regularly spaced eye movements.
- AI.II.B.S2* Scan around physical obstructions.
- AI.II.B.S3* Use appropriate visual scanning techniques.
- AI.II.B.S4* Use electronic traffic alert systems, if available.

Task C. Runway Incursion Avoidance

References: AC 91-73; AIM; Chart Supplements; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands runway incursion avoidance, can apply that knowledge, manage

associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge:	The applicant demonstrates instructional knowledge by describing and explaining:
<i>AI.II.C.K1</i>	Runway incursion definition.
<i>AI.II.C.K2</i>	Taxi instructions/clearances.
<i>AI.II.C.K3</i>	The importance of recording taxi instructions and reviewing taxi routes on the airport diagram.
<i>AI.II.C.K4</i>	Airport markings, signs, and lights including the importance of hold lines associated with runways.
<i>AI.II.C.K5</i>	Appropriate flight deck activities during taxiing, including taxi route planning, briefing the location of Hot Spots, communicating and coordinating with ATC.
<i>AI.II.C.K6</i>	Communication and operational procedures at uncontrolled airports.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

<i>AI.II.C.R1</i>	Distractions, task prioritization, loss of situational awareness, or disorientation.
<i>AI.II.C.R2</i>	Confirmation or expectation bias as related to taxi instructions.
<i>AI.II.C.R3</i>	Entering or crossing runways.
<i>AI.II.C.R4</i>	Night taxi operations.
<i>AI.II.C.R5</i>	Low visibility taxi operations.
<i>AI.II.C.R6</i>	Runway incursion after landing.
<i>AI.II.C.R7</i>	Operating on taxiways between parallel runways.

Skills: The applicant demonstrates how to:

<i>AI.II.C.S1</i>	Deliver instruction on the elements and techniques for runway incursion avoidance.
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Task D. Principles of Flight

References: FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-23, FAA-H-8083-25; POH/AFM

Objective: To determine the applicant understands aerodynamics appropriate to the desired instructor certificate, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge:	The applicant demonstrates instructional knowledge by describing and explaining:
<i>AI.II.D.K1</i>	Airfoil design characteristics.
<i>AI.II.D.K2</i>	Airplane stability, maneuverability and controllability.
<i>AI.II.D.K3</i>	Turning tendency (e.g., torque, p-factor, spiraling slipstream, and gyroscopic precession).
<i>AI.II.D.K4</i>	Forces acting on an airplane.
<i>AI.II.D.K5</i>	Load factors in airplane design.
<i>AI.II.D.K6</i>	Wingtip vortices and appropriate precautions.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

AI.II.D.R1 The basic aerodynamic principles of flight.

Skills: The applicant demonstrates how to:

AI.II.D.S1 Deliver instruction on principles of flight, including at least three of the elements listed in K1 through K6.

Task E. Aircraft Flight Controls and Operation of Systems

References: FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-23, FAA-H-8083-25; POH/AFM

Objective: To determine the applicant understands flight controls and systems on the airplane provided for the flight test, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Note: *If K1 is selected, the evaluator must assess the applicant's knowledge of all sub elements.*

Knowledge: The applicant demonstrates instructional knowledge by describing and explaining:

AI.II.E.K1 Airplane systems, including:

AI.II.E.K1a a. Primary flight controls

AI.II.E.K1b b. Secondary flight controls

AI.II.E.K1c c. Powerplant and propeller

AI.II.E.K1d d. Landing gear

AI.II.E.K1e e. Fuel, oil, and hydraulic

AI.II.E.K1f f. Electrical

AI.II.E.K1g g. Avionics

AI.II.E.K1h h. Pitot-static, vacuum/pressure, and associated flight instruments

AI.II.E.K1i i. Environmental

AI.II.E.K1j j. Deicing and anti-icing

AI.II.E.K1k k. Water rudders (ASES, AMES)

AI.II.E.K1l l. Oxygen system

AI.II.E.K2 Indications of and procedures for managing system abnormalities or failures.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

AI.II.E.R1 Detection of system malfunctions or failures.

AI.II.E.R2 Management of a system failure.

AI.II.E.R3 Monitoring and management of automated systems.

AI.II.E.R4 Providing instruction in unfamiliar aircraft or operating with unfamiliar flight display systems and avionics.

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- Skills:** The applicant demonstrates and simultaneously explains how to:
- AI.II.E.S1 Operate at least three of the systems listed in K1a through K1l appropriately.

Task F. Performance and Limitations

References: FAA-H-8083-1, FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25; POH/AFM

Objective: To determine the applicant understands aircraft performance and limitations, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

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- Knowledge:** The applicant demonstrates instructional knowledge by describing and explaining:
- AI.II.F.K1 Elements related to performance and limitations by explaining the use of charts, tables, and data to determine performance.
 - AI.II.F.K2 Factors affecting performance, including:
 - AI.II.F.K2a a. Atmospheric conditions
 - AI.II.F.K2b b. Pilot technique
 - AI.II.F.K2c c. Airplane configuration
 - AI.II.F.K2d d. Airport environment
 - AI.II.F.K2e e. Loading and weight and balance
 - AI.II.F.K3 Weight and balance terms, including: basic empty weight, maximum gross weight, arm, moment, reference datum, center of gravity (CG) and CG limits, and useful load.
 - AI.II.F.K4 Methods for computing CG.
 - AI.II.F.K5 Aerodynamics.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

- AI.II.F.R1 Use of performance charts, tables, and data.
- AI.II.F.R2 Airplane limitations.
- AI.II.F.R3 Possible differences between calculated performance and actual performance.
- AI.II.F.R4 Exceeding weight limits.
- AI.II.F.R5 Operating outside of CG limits.
- AI.II.F.R6 Shifting, adding, and removing weight.

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- Skills:** The applicant demonstrates and simultaneously explains how to:
- AI.II.F.S1 Use the appropriate airplane performance charts, tables, and data.
 - AI.II.F.S2 Compute the weight and balance, correct out-of-center of gravity loading errors and determine if the weight and balance remains within limits during all phases of flight.

Task G. National Airspace System

References: 14 CFR parts 71, 91, 93; AIM; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25; VFR Navigation Charts

Objective: To determine the applicant understands the National Airspace System, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge: The applicant demonstrates instructional knowledge by describing and explaining:

AI.II.G.K1 Airspace classes and associated requirements and limitations.

AI.II.G.K2 Chart symbols.

AI.II.G.K3 Special use airspace (SUA), special flight rules areas (SFRA), temporary flight restrictions (TFR), and other airspace areas.

AI.II.G.K4 Currency of publications.

AI.II.G.K5 Special visual flight rules (VFR) requirements.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

AI.II.G.R1 Various classes and types of airspace.

Skills: The applicant demonstrates and simultaneously explains how to:

AI.II.G.S1 Identify and comply with the requirements for basic VFR weather minimums and flying in particular classes of airspace.

AI.II.G.S2 Correctly identify airspace and operate in accordance with associated communication and equipment requirements.

AI.II.G.S3 Identify the requirements for operating in SUA or within a TFR. Identify and comply with special air traffic rules (SATR) and SFRA operations, if applicable.

Task H. Navigation Systems and Radar Services

References: AC 91-78; AIM; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands navigation systems and radar services, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Note: *The evaluator should reference the manufacturer's equipment supplement(s) as necessary for appropriate limitations, procedures, etc.*

Knowledge: The applicant demonstrates instructional knowledge by describing and explaining:

AI.II.H.K1 Ground-based navigation (identification, orientation, course determination, equipment, tests, regulations, interference, appropriate use of navigation data, and signal integrity).

AI.II.H.K2 Satellite-based navigation (e.g., equipment, regulations, authorized use of databases, and Receiver Autonomous Integrity Monitoring (RAIM)).

AI.II.H.K3 Radar assistance to visual flight rules (VFR) aircraft (e.g., operations, equipment, available services, traffic advisories).

AI.II.H.K4 Transponder (Mode(s) A, C, and S) and Automatic Dependent Surveillance-Broadcast (ADS-B).

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

- AI.II.H.R1 Management of automated navigation and autoflight systems.
 - AI.II.H.R2 Distractions, task prioritization, loss of situational awareness, or disorientation.
 - AI.II.H.R3 Limitations of the navigation system in use.
 - AI.II.H.R4 Loss of a navigation signal.
 - AI.II.H.R5 Use of an electronic flight bag (EFB), if used.
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Skills: The applicant demonstrates and simultaneously explains how to:

- AI.II.H.S1 Use an airborne electronic navigation system.
- AI.II.H.S2 Determine the airplane's position using the navigation system.
- AI.II.H.S3 Intercept and track a given course, radial, or bearing.
- AI.II.H.S4 Recognize and describe the indication of station or waypoint passage.
- AI.II.H.S5 Use proper communication procedures when utilizing radar services.

Task I. Navigation and Cross-Country Flight Planning

References: 14 CFR part 91; AIM; Chart Supplements; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25, NOTAMs; VFR Navigation Charts

Objective: To determine the applicant understands navigation and cross-country flight planning, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Note: *Preparation, presentation, and explanation of a computer-generated flight plan is an acceptable option.*

Knowledge: The applicant demonstrates instructional knowledge by describing and explaining:

- AI.II.I.K1 Route planning, including consideration of different classes and special use airspace (SUA) and selection of appropriate and available navigation/communication systems and facilities.
- AI.II.I.K2 Altitude selection accounting for terrain and obstacles, glide distance of airplane, visual flight rules (VFR) cruising altitudes, and effect of wind.
- AI.II.I.K3 Plotting a course.
- AI.II.I.K4 Power setting selection.
- AI.II.I.K5 Calculating:
 - AI.II.I.K5a a. Time, climb and descent rates, course, distance, heading, true airspeed, and groundspeed
 - AI.II.I.K5b b. Estimated time of arrival, including conversion to universal coordinated time (UTC)
 - AI.II.I.K5c c. Fuel requirements, including reserve
- AI.II.I.K6 Elements of a VFR flight plan.
- AI.II.I.K7 Correlate weather information to make a go/no-go decision.
- AI.II.I.K8 Procedures for activating and closing a VFR flight plan.

Area of Operation II. Technical Subject Areas

AI.II.I.K9	Magnetic compass errors.
AI.II.I.K10	Pilotage and dead reckoning.
AI.II.I.K11	Planned calculations versus actual results and required corrections.
AI.II.I.K12	Diversion and lost procedures.
AI.II.I.K13	Inflight intercept procedures.
AI.II.I.K14	Use of an electronic flight bag (EFB), if used.
AI.II.I.K15	Chart symbols.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

AI.II.I.R1	Pilot.
AI.II.I.R2	Aircraft.
AI.II.I.R3	Environment (e.g., weather, airports, airspace, terrain, obstacles).
AI.II.I.R4	External pressures.
AI.II.I.R5	Limitations of air traffic control (ATC) services.
AI.II.I.R6	Fuel planning.

Skills: The applicant demonstrates and simultaneously explains how to:

AI.II.I.S1	Prepare, present, and explain a cross-country flight plan assigned by the evaluator, including a risk analysis to the first fuel stop.
AI.II.I.S2	Apply pertinent information from appropriate and current aeronautical charts, Chart Supplements; Notices to Air Missions (NOTAMs) relative to airport, runway and taxiway closures; and other flight publications.
AI.II.I.S3	Create a navigation plan and simulate filing a VFR flight plan.
AI.II.I.S4	Recalculate fuel reserves based on a scenario provided by the evaluator.

Task J. 14 CFR and Publications

References: 14 CFR parts 1, 61, 91; 49 CFR part 830; AIM; Chart Supplements; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-25; POH/AFM

Objective: To determine the applicant understands the Code of Federal Regulations and other relevant publications, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge: The applicant demonstrates instructional knowledge by describing and explaining:

AI.II.J.K1	14 CFR parts 1, 61, and 91.
AI.II.J.K2	49 CFR part 830.
AI.II.J.K3	Advisory Circulars, INFOs, and SAFOs.
AI.II.J.K4	Airman Certification Standards or Practical Test Standards.

AI.II.J.K5 Pilot's Operating Handbooks or flight manuals.

AI.II.J.K6 Aeronautical Information Manual (AIM).

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

AI.II.J.R1 Use of expired charts, manuals, or publications without current updates.

Skills: The applicant demonstrates how to:

AI.II.J.S1 Teach at least one of the elements listed in K1 through K6.

Task K. Endorsements and Logbook Entries

References: 14 CFR part 61; AC 61-65; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25

Objective: To determine the applicant understands logbook entries and endorsements, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge: The applicant demonstrates instructional knowledge by describing and explaining:

AI.II.K.K1 Required logbook entries for instruction given.

AI.II.K.K2 Required student pilot pre-solo knowledge test, solo endorsements, and logbook entries.

AI.II.K.K3 Other required pilot logbook endorsements (e.g., Class B Airspace, Special Federal Aviation Regulation (SFAR)).

AI.II.K.K4 Preparation of a recommendation for a pilot practical test, including appropriate logbook entry and relevant certificate/rating application for:

AI.II.K.K4a a. Initial pilot certification

AI.II.K.K4b b. Additional pilot certification

AI.II.K.K4c c. Additional aircraft qualification

AI.II.K.K5 Endorsement of a pilot logbook for the satisfactory completion of an FAA flight review.

AI.II.K.K6 Required flight instructor records.

AI.II.K.K7 Flight instructor renewal and reinstatement requirements.

Risk

Management: The applicant is able to identify, assess, and mitigate risk associated with:

AI.II.K.R1 Endorsements without appropriate limitations or expiration dates.

Skills: The applicant demonstrates how to:

AI.II.K.S1 Describe and prepare logbook entries/endorsements required for at least two of the events specified in the elements or sub-elements of K1 through K5.

Task L. Water and Seaplane Characteristics, Seaplane Bases, Maritime Rules, and Aids to Marine Navigation (ASES, AMES)

References: AIM; Chart Supplements; FAA-H-8083-2, FAA-H-8083-9, FAA-H-8083-23, FAA-H-8083-25; POH/AFM; USCG Navigation Rules

Objective: To determine the applicant understands water and seaplane characteristics, seaplane bases, maritime rules, and aids to marine navigation, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge: The applicant demonstrates instructional knowledge by describing and explaining:

- AI.II.L.K1* Characteristics of a water surface as affected by features, such as:
 - AI.II.L.K1a* a. Size and location
 - AI.II.L.K1b* b. Protected and unprotected areas
 - AI.II.L.K1c* c. Surface wind
 - AI.II.L.K1d* d. Direction and strength of water current
 - AI.II.L.K1e* e. Floating and partially submerged debris
 - AI.II.L.K1f* f. Sandbars, islands, and shoals
 - AI.II.L.K1g* g. Vessel traffic and wakes
 - AI.II.L.K1h* h. Direction and height of waves
 - AI.II.L.K1i* i. Other characteristics specific to the area
- AI.II.L.K2* Float and hull construction, and its effect on seaplane performance.
- AI.II.L.K3* Causes of porpoising and skipping, and the pilot action needed to prevent or correct these occurrences.
- AI.II.L.K4* How to locate and identify seaplane bases on charts or in directories.
- AI.II.L.K5* Operating restrictions at various bases.
- AI.II.L.K6* Right-of-way, steering, and sailing rules pertinent to seaplane operation.
- AI.II.L.K7* Marine navigation aids, such as buoys, beacons, lights, sound signals, and range markers.
- AI.II.L.K8* Naval vessel protection zones.
- AI.II.L.K9* No wake zones.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

- AI.II.L.R1* Local conditions.
- AI.II.L.R2* Impact of marine traffic.
- AI.II.L.R3* Right-of-way and sailing rules pertinent to seaplane operations.
- AI.II.L.R4* Limited services and assistance available at seaplane bases.

Skills: The applicant demonstrates and simultaneously explains how to:

- AI.II.L.S1* Explain how float and hull construction can affect seaplane performance.
- AI.II.L.S2* Describe how to correct for porpoising and skipping.
- AI.II.L.S3* Identify marine navigation aids.
- AI.II.L.S4* Describe correct right-of-way, steering, and sailing operations.

AI.II.L.S5 Assess the water surface characteristics for the proposed flight.

AI.II.L.S6 Identify restrictions at local seaplane bases.

Task M. Night Operations

References: AIM; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25; POH/AFM

Objective: To determine the applicant understands night operations, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge: The applicant demonstrates instructional knowledge by describing and explaining:

AI.II.M.K1 Physiological aspects of vision related to night flying.

AI.II.M.K2 Lighting systems identifying airports, runways, taxiways and obstructions, as well as pilot controlled lighting.

AI.II.M.K3 Airplane equipment and lighting requirements for night operations.

AI.II.M.K4 Personal equipment essential for night flight.

AI.II.M.K5 Night orientation, navigation, chart reading techniques and methods for maintaining night vision effectiveness.

AI.II.M.K6 Use of instruments to verify the aircraft attitude at night.

AI.II.M.K7 Visual illusions at night.

AI.II.M.K8 Night taxi operations.

AI.II.M.K9 Interpretation of traffic position and direction based solely on position lights.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

AI.II.M.R1 Inoperative equipment.

AI.II.M.R2 Weather considerations specific to night operations.

AI.II.M.R3 Collision hazards.

AI.II.M.R4 Distractions, task prioritization, loss of situational awareness, or disorientation.

AI.II.M.R5 Effect of visual illusions and night adaptation during all phases of night flying.

AI.II.M.R6 Runway incursion.

AI.II.M.R7 Night currency versus proficiency.

Skills: The applicant demonstrates how to:

AI.II.M.S1 Teach at least one of the elements listed in K1 through K9.

Task N. High Altitude Operations - Supplemental Oxygen

References: 14 CFR part 91; AC 61-107; AIM; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25; POH/AFM

Objective: To determine the applicant exhibits satisfactory knowledge, risk management, and skills associated

with flight at higher altitudes where supplemental oxygen is required or recommended, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge:	The applicant demonstrates instructional knowledge by describing and explaining:
AI.II.N.K 1	Regulatory requirements for supplemental oxygen use by flight crew and passengers.
AI.II.N.K2	Physiological factors, including:
AI.II.N.K2a	a. Impairment
AI.II.N.K2b	b. Symptoms of hypoxia
AI.II.N.K2c	c. Time of useful consciousness (TUC)
AI.II.N.K3	Operational factors, including:
AI.II.N.K3a	a. Characteristics, limitations, and applicability of continuous flow, demand, and pressure-demand oxygen systems
AI.II.N.K3b	b. Differences between and identification of “aviator’s breathing oxygen” and other types of oxygen
AI.II.N.K3c	c. Precautions when using supplemental oxygen systems

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

- AI.II.N.R1 High altitude flight.
 - AI.II.N.R2 Use of supplemental oxygen.
 - AI.II.N.R3 Management of compressed gas containers.
 - AI.II.N.R4 Combustion hazards in an oxygen-rich environment.
-

Skills: The applicant demonstrates and simultaneously explains how to:

- AI.II.N.S1 Provide an adequate briefing on use of supplemental oxygen equipment.
 - AI.II.N.S2 Operate or simulate operation of the installed or portable oxygen equipment in the aircraft, if installed or available.
 - AI.II.N.S3 Determine the quantity of supplemental oxygen required in a scenario given by the evaluator.
-

Task O. High Altitude Operations - Pressurization

References: AC 61-107; AIM; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25; POH/AFM

Objective: To determine the applicant understands flight in pressurized aircraft at high altitudes, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Knowledge:	The applicant demonstrates instructional knowledge by describing and explaining:
AI.II.O.K1	Fundamental concepts of aircraft pressurization system, including failure modes.
AI.II.O.K2	Physiological factors, including:
AI.II.O.K2a	a. Impairment
AI.II.O.K2b	b. Symptoms of hypoxia

- AI.II.O.K2c c. Time of useful consciousness (TUC)
- AI.II.O.K2d d. Effects of rapid decompression on crew and passengers

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

- AI.II.O.R1 High altitude flight.
- AI.II.O.R2 Malfunction of pressurization system, if equipment is installed.

Skills: The applicant demonstrates and simultaneously explains how to:

- AI.II.O.S1 Operate the pressurization system, if equipment is installed.
- AI.II.O.S2 Respond appropriately to simulated pressurization malfunctions, if equipment is installed.

Task P. One Engine Inoperative (OEI) Performance (AMEL, AMES)

References: FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-9, FAA-H-8083-25; FAA-P-8740-66; POH/AFM

Objective: To determine the applicant understands elements related to multiengine performance, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Note: *Evaluator assesses the applicant's knowledge of at least two knowledge elements from this Task.*

Knowledge: The applicant demonstrates instructional knowledge by describing and explaining:

- AI.II.P.K1 Proficient use of appropriate performance charts, tables, graphs, or other data to determine airplane performance and limitations for all phases of flight.
- AI.II.P.K2 Effects of exceeding limitations.
- AI.II.P.K3 Effects of atmospheric conditions on performance.
- AI.II.P.K4 Factors to be considered to determine required performance is within the airplane's single and multiengine capabilities.
- AI.II.P.K5 Aerodynamics of OEI operation including:
 - AI.II.P.K5a a. Critical engine
 - AI.II.P.K5b b. Effects of bank angle on V_{MC}
 - AI.II.P.K5c c. Zero side slip
 - AI.II.P.K5d d. Reasons for loss of directional control
- AI.II.P.K6 The relationship between minimum control speed (V_{MC}) and stall speed and the effect of density altitude on that relationship.
- AI.II.P.K7 How to determine the best course of action after an engine failure.

Risk

Management: The applicant explains and teaches how to identify and manage risk associated with:

- AI.II.P.R1 Exceeding the critical angle of attack.
- AI.II.P.R2 Loss of directional control.