

Lesson Plans

Certified Flight Instructor, Airplane Single Engine Land



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Effects of Human Behavior and Communication

Allotted Time: 0.5 Hr

- Objective:** The client understands human behavior, and so, is able to harness effective communication to provide effective instruction.

References: *AIH ch2*

Materials: AIH, CFI ACS, FOI acronym "cheat-sheet"

Content

- Human Behavior - The result of attempting to fulfill needs
 - Instructor and learner relationship
 - Motivation
 - Human needs
 - Defense mechanisms (DR,DR,F,CPR!)
 - Reactions
 - Anxiety and stress
 - Impatience
 - Worry, lack of interest
 - Discomfort, illness, fatigue, dehydration
 - Apathy -> inadequate instruction
 - Teaching the adult learner
 - Basic elements of communication (speaker symbol receiver)
 - Barriers to effective communication
 - Developing communication skills
-

Instructor Actions

- Explain and relate content to client
 - Ask questions throughout lesson to engage client
 - To review: give client a scenario-based-question to apply ADM and identify a defense mechanism
-

Client Actions

- Listen and take notes
 - Answer questions and ask additional questions to the instructor
 - Apply ADM and identify defense mechanisms and corrective action in a scenario given by the instructor
-

Completion standards

- At the end of the lesson, the Client is able to identify and remedy abnormal emotional reactions and defense mechanisms.

Learning Process

Allotted Time: 0.5 Hr

- Objective:** The Client understands the learning process, and can provide effective instruction.

References: *AIH ch3*

Materials: AIH, CFI ACS, FOI acronym “cheat-sheet”

Content

- Learning - A change in behavior as a result of experience
 - Behaviorism vs Cognitive theory
 - Acquiring knowledge
 - Laws of learning
 - Domains of learning (CAP)
 - Characteristics of Learning (PRMA)
 - Steps in acquiring skill
 - Types of practice
 - Evaluation versus critique.
 - Distractions, interruptions, fixation, and inattention.
 - Errors.
 - Memory & Retention
 - Transfer of learning
-

Instructor Actions

- Explain and relate content to client
 - Ask questions throughout lesson to engage client
-

Client Actions

- Listen and take notes
 - Answer questions and ask additional questions to the instructor
-

Completion standards

- Apply educational theories to ground and flight instruction. Recognize and correct conditions that undermine the learning process. Use techniques, including realistic distractions that teach flight students how to manage a workload.

Course Development

Allotted Time: 0.5 Hr

- Objective:** The Client understands the teaching process, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

References: AIH ch7

Materials: AIH, CFI ACS

Content

- 1. Objective
 - 1.5 Study!
 - 2. Blocks of learning
 - 3. Syllabus
 - 4. Lesson Plans (more studying)
 - Implementation:
 - Ground VS in flight
 - Time efficiency vs Depth
 - Scenario Based Training
-

Instructor Actions

- Explain and relate content to client
 - Ask questions throughout lesson to engage client
-

Client Actions

- Listen and take notes
 - Answer questions and ask additional questions to the instructor
-

Completion standards

- Client is able to prepare a lesson plan and navigate teaching a classroom

Student Evaluation, Assessment, and Testing

Allotted Time: 0.5 Hr

- Objective:** The Client understands evaluation and testing, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

References: AIH ch6

Materials: AIH, CFI ACS

Content

- Assessment VS Critique VS Evaluation
 - Purpose and characteristics of effective assessment.
 - Traditional VS Authentic assessments.
 - Learner-centered assessment
 - Maneuver or procedure grades
 - Assessing risk management skills
 - Choosing an effective assessment method.
 - Purposes and types of critiques.
 - Oral assessment:
 - Characteristics of effective questions
 - Types of questions to avoid
 - Answering learner questions
 - Assessment of piloting ability
-

Instructor Actions

- Explain and relate content to client
 - Ask questions throughout lesson to engage client
-

Client Actions

- Listen and take notes
 - Answer questions and ask additional questions to the instructor
-

Completion standards

- Client is able to use appropriate methods and techniques to assess learner performance in ground or flight training.

Effective Teaching

Allotted Time: 0.5 Hr

- Objective:** The Client understands effects of instructor behavior on effective teaching, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

References: AIH ch9

Materials: AIH, CFI ACS

Content

- Responsibilities:
 - Helping learners
 - Providing adequate instruction
 - Training to established standards of performance
 - Emphasizing the positive
 - Minimizing learner frustrations
 - Supervision and Surveillance of student
 - Flight instructor qualifications and professionalism.
 - Professional development.
 - Instructor ethics and conduct.
-

Instructor Actions

- Explain and relate content to client
 - Ask questions throughout lesson to engage client
-

Client Actions

- Listen and take notes
 - Answer questions and ask additional questions to the instructor
-

Completion standards

- Client is able to deliver ground or flight instruction on an instructor-assigned task in a manner consistent with instructor responsibilities and professional characteristics.

Risk Management and Accident Prevention

Allotted Time: 0.5 Hr

- Objective:** Client understands teaching practical risk management, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

References: AIH ch1

Materials: AIH, CFI ACS

Content

- risk identification, assessment, and mitigation
 - (P) Pave, (P) Care, (P) Team
 - DECIDE
 - Flight Risk Assessment Tools (FRATs)
 - Managing risk during flight instruction, including:
 - Common flight instruction risks
 - Best practices
 - Special considerations while teaching takeoffs and landings
 - SRM and CRM
-

Instructor Actions

- Explain and relate content to client
 - Ask questions throughout lesson to engage client
-

Client Actions

- Listen and take notes
 - Answer questions and ask additional questions to the instructor
-

Completion standards

- Client is able to Use scenario-based training (SBT) to demonstrate, teach, and assess risk management and Aeronautical Decision-Making (ADM) skills.
- Identify, assess, and mitigate risks commonly associated with flight instruction
- Model and teach safety practices

Aero-Medical Factors

Allotted Time: 0.5 Hr

- Objective:** The Client Exhibits the ability to apply personal health, flight physiology and aeromedical and human factors to decision making in preflight-and in-flight scenarios.

References: AIM 8-1-1, 14CFR61.23, PHAK ch17

Materials: [SLIDESHOW](#)

Content

- Medical Certificates
 - IMSAFE
 - Hazardous attitudes (AMIIR)
 - Confirmation/Expectation Bias
 - Motion Sickness
 - Hypoxia (Hypoxic, Hypemic, Histotoxic)
 - Hyperventilation
 - Hypothermia
 - Dissolved Nitrogen after Scuba Diving
-

Instructor Actions

- Discuss with the student the above elements' symptoms, significance, and corrective actions.
 - Utilize slideshow to illustrate each element
 - Ask student to apply the IMSAFE checklist in a preflight planning scenario
 - Ask student to apply corrective action in an in-flight scenarios regarding symptoms of elements above
 - Assist student to use the Aviation Medicine Database (<https://www.aviationmedicine.com/>) to identify weather common household medicine of theirs is airworthy or not
-

Client Actions

- Take notes and ask questions during the discussion & presentation
 - Apply IMSAFE checklist and ADM in scenarios given by the instructor
 - Search the Aviation Medicine Database and identify the airworthiness of a common medicine
-

Completion standards

- At the end of the lesson, Client shall be able to associate symptoms with conditions, and apply ADM to determine best course of action in scenario given by the instructor.

Scanning & Collision Avoidance

Allotted Time: 0.5 Hr

- Objective:** The Client understands visual scanning and collision avoidance. The client can demonstrate developed PIC skills and ADM involving collision avoidance.

References: 14CFR 91.113, PHAK 14-26

Materials: Model aircrafts & Whiteboard

Content

- Regulations, P.I.C Responsibility
 - Haze, rain, clouds
 - Night flight ground lights V.S. nav lights
 - Visual Scanning technique
 - Aircraft Blind Spots, antidotes
 - Technique and Technology
 - Heightened risk phases of flight
 - Implementing Multitasking
-

Instructor Actions

- Explain and relate Scanning practices to client (like driving a car)
 - Engage client by asking questions
 - Give client a scenario-question to develop ADM (non-towered field ops)
-

Client Actions

- Listen and take notes
 - engage with instructor by
 - Ask questions & Answer instructor-assigned-questions
-

Completion standards

- At the end of the lesson, the client is able to visually scan effectively and can use avionics/EFB (as applicable) to aid in collision avoidance.

Airport Markings and Incursion Avoidance

Allotted Time: 0.75 Hr

- Objective:** The Client understands how to navigate on an airport surface. Client also understands the risks associated with Runway incursions and can apply ADM to mitigate risks at unfamiliar airports *AND* very familiar airports

References: AIM 2-3-1

Materials: satellite imagery of local airport, Chart Supplement, Airport diagram, AIM Fig 2-3-15, Notam Database (Foreflight or web)

Content

- Taxiway signage and paint
 - Runway signage and paint
 - NOTAM information
 - Taxiing best practices
 - Runway incursion definition
 - Rwy Inc. dangers (xing rwys, parallel rwys...)
 - Communication factor in Rwy Inc.'s
 - Rwy Inc. risk mitigation techniques
 - Checklists & Diagrams (Hotspots)
 - Best Practices
-

Instructor Actions

- Using Images, describe and relate the significance of each airport marking to client
 - Roleplay with client taxiing on airport with model and image of airport
 - Demonstrate and ask student to read & decode airport surface NOTAMs
-

Client Actions

- Listen and ask questions
 - Roleplay with instructor to practice identifying airport markings in a scenario
 - Apply ADM to scenario question from instructor to mitigate risk related to runway incursion
-

Completion standards

- At the end of the lesson, Client can demonstrate ability to identify relevant airport markings and mitigate risk encompassing runway incursions.

Principles of Flight

Allotted Time: 0.75 Hr

- Objective:** The Client can apply principles to explain in-flight phenomena. Client is prepared to later develop concepts like W&B, short field takeoff, and performance calculation.

References: PHAK Ch4

Materials: Whiteboard, model airplane, PHAK/test supplement

Content

- Airfoil design characteristics
 - Airplane stability, maneuverability and controllability
 - 4 Forces acting on an airplane
 - Load factors in airplane design
 - Turning tendency *Trq, P-fact, Spiral, Gyro*
 - Wingtip vortices
-

Instructor Actions

- Explain and relate each element to the client, emphasizing risk management
 - Engage client with questions throughout lesson, and at least one scenario regarding principles of flight in a in-flight-scenario (e.x. turns)
-

Client Actions

- Ask and answer questions to and from the instructor
 - Listen and take notes
 - Apply ADM to a scenario as given by the instructor
-

Completion standards

- Client is able to describe the elements above. Client is able to apply knowledge in a scenario as assigned by instructor.

Flight Controls

Allotted Time: 1 Hr

- Objective:** The client understands the aerodynamic principles behind each flight control on their airplane. The client has a firm foundation regarding aerodynamics and flight controls.

References: PHAK ch6, POH

Materials: Model airplane, Whiteboard, POH

Content

- Review 4 forces of flight
 - How do we turn?
 - Primary
 - Ailerons + *adverse yaw*
 - Rudder + *Coordination, C.G*
 - Elevator/stabilator + *T tail, backwash, C.G, anti-servo*
 - Secondary
 - Flaps + *slots, slats, spoilers*
 - Trim
- Movement of trim & Proper technique
-

Instructor Actions

- Introduce and relate flight controls to client.
 - Illustrate how the 4 forces of flight change with control inputs.
 - Engage the client by asking questions throughout the lesson
-

Client Actions

- Listen and take notes
 - Ask questions to and answer questions given by the instructor
-

Completion standards

- At the end of the lesson, the client has a deep understanding of their flight controls and is able to operate each control properly in flight

Intro to Avionics

Allotted Time: 0.25 Hr

- Objective:** The Client can interpret “6-pack” instruments. Client knows normal and abnormal indications and is prepared for further lessons.

References: *AFH*

Materials: Airplane cockpit poster (6 pack).

Content

- ASI
 - AI
 - ALTI
 - Compass
 - T.C
 - D.G
 - VSI
 - CDI
-

Instructor Actions

- Illustrate and demonstrate interpreting flight instruments
 - Review normal and abnormal indications
 - Quiz client on indications
-

Client Actions

- Listen and take notes
 - Practice reading instruments
 - Answer questions relating to instrument readings
-

Completion standards

- Client is able to understand and correlate instrument readings between each other.

Powerplant

Allotted Time: 0.75 Hr

- Objective:** The client understands and can explain operating principles behind their aircrafts powerplant. Client can understand and explain a diagram of their airplanes' powerplant, including indications and controls.

References: *POH, PHAK*

Materials: [Slideshow](#) or whiteboard, POH

Content

- Why?
 - Overview (A.M.O!)
 - Vocabulary
 - Where is your power plant?
 - Our Engine (deeper than LHAND!)
 - Connecting systems (elec, fuel, oil, vac)
-

Instructor Actions

- Define and relate Power Plant components to student.
 - Ask questions frequently to verify engagement and retention of information
 - Explain the operation of powerplant and normal vs abnormal indications
 - Explain corrective actions to abnormal situations. *Ask ADM Questions!*
-

Client Actions

- Listen and *take notes*
 - Ask questions and Answer questions given by the instructor
-

Completion standards

- At the end of the lesson, the Client is able to identify components of the powerplant in diagrams and in preflight-walk-arounds. Client can identify and remedy abnormal powerplant indications in a scenario given by the instructor

Fuel, Oil, and Hydraulic

Allotted Time: 0.75 Hr

- Objective:** The client understands and can explain operating principles behind their aircrafts Fuel, Oil, and hydraulic systems. Client can understand and explain a diagram of their airplanes' systems, including indications and controls.

References: C152 POH section 7, PHAK ch 7

Materials: whiteboard, C152 POH

Content

- Fuel system
 - Tanks, sumps, screen, shutoff valve, sump, strainer, primer, carburetor
 - Oil System
 - Dry sump.
 - Sump, strainer pump, thermo-bypass, cooler, filter, psi relief, engine
 - Gravity return
 - Hydraulic system
 - Hydraulically actuated brakes: we push hydraulic fluid from piston to hydraulic line, to brake pads. Disc clamp brakes
-

Instructor Actions

- Explain and relate content to client.
 - Illustrate system operation through use of drawn diagrams and POH diagrams.
 - If able, take client to aircraft on ramp: point out each element as possible
 - Ask questions often to engage client
 - Through scenario-based-questions, walk the client through abnormal situations and corrective actions
-

Client Actions

- Listen and take notes
 - Ask questions
 - Answer questions given by instructor
 - Draw each diagram of the system with the instructor's guidance.
 - Apply ADM to abnormal situations in scenarios given by the instructor
-

Completion standards

- Client is able to explain the operation and mitigate risk with ADM (in flight and in pre-flight) associated with each system.

Electrical

Allotted Time: 0.75 Hr

- Objective:** Client understands and can explain diagram of electrical system. Client is knowledgeable on basic electronic principles and can diagnose and remedy indications of errors.

References: [cessnaflyer](#), *C152 POH*, [Seth Lake youtube video](#)

Materials: Whiteboard / scratch paper, cessna 152 POH

Content

- Overview: *Don't have to be an electrical engineer*
 - Electricity is like water
 - Components of electrical system
 - How do they work together
 - How do we monitor our system?
 - Normal VS abnormal
 - Emergency procedures
-

Instructor Actions

- Explain and relate electrical system to client
 - Ask questions throughout lesson to engage client
 - Ask student to apply ADM in an emergency scenario (elec. System failure)
-

Client Actions

- Listen and take notes
 - Ask questions
 - Answer questions given by the instructor
 - Apply ADM in a scenario given by the instructor
-

Completion standards

- At the end of the lesson, client is can explain each component of their airplanes' electrical system, locate said components on both diagram and actual aircraft, and can take corrective action to abnormal indications.

Pitot, vacuum & Electrical *Instrument* systems

Allotted Time: 0.5 Hr

- Objective:** The client understands the principles behind the 6-pack flight instruments. The client can identify the common errors and is able to remedy abnormal situations

References: PHAK ch8, POH

Materials: Whiteboard, POH

Content

- Pitot-static - *Pressure Differential*
 - Pitot tube+drain & heat
 - Static port & Alt.
 - ASI - *compare ram to static*
 - ALTI. *compare inside psi. to outside - as psi decreases, so does temperature!*
 - VSI - *compare psi. to delayed psi.*
 - Errors & Failure
 - Vacuum - *Rigidity in space*
 - Air filter, vac, ai,dg, relief, check valve, low vac sensor, pumps, vent
 - A.I. - *Principles used + no precession why?*
 - DG *Principles used + precession*
 - Failure
 - Electrical - *Precession*
 - T.C.
 - Compass - *UNO ANDS DVMONA*
-

Instructor Actions

- Explain and relate Instrument systems to client using POH and Drawn illustrations
 - Engage client by asking questions.
 - Conclude with Scenario based questions regarding instrument failure.
-

Client Actions

- Listen and take notes
 - Answer questions given by instructor
 - Ask questions throughout lesson
 - Answer and apply ADM in a scenario given by the instructor
-

Completion standards

- At the end of the lesson, the client is able to draw and explain a diagram of each instrument system. The client can identify and apply remedies to instrument errors as well as use proper preflight technique to *avoid* instrument errors in the first place.

Environmental, Ice & Oxygen system

Allotted Time: 0.5 Hr

- Objective:** The client understands the operation of environmental controls and ice prevention/removal controls. The client has a working understanding of the anti and de-icing systems onboard other airplanes and the principles behind them.

References: C152 POH

Materials: Scratch paper/whiteboard

Content

- Environmental system
 - Passenger comfort
 - Ram air sources (overhead and panel-pull)
 - Why Icing bad?
 - How to stop ice
 - Anti ice
 - De ice
 - On our aircraft: Pitot heat, carb heat, Windshield defrost
 - Pre-flight de-ice liquid
-

Instructor Actions

- Explain and relate content to client
 - If practical, take show client in-aircraft controls for each system
 - Ask questions throughout lesson to engage client
 - Emphasise and ask question regarding scenarios in which anti/de-ice would be needed
-

Client Actions

- Listen and take notes
 - Ask questions
 - Answer questions given by instructor
 - Apply ADM to mitigate risk associated with ice and anti/de-ice systems
-

Completion standards

- Client can explain operation of environmental and anti/de-ice equipment.

Performance

Allotted Time: 0.5 Hr

- Objective:** The Client understands and can explain factors that affect performance and limitations and can calculate performance.

References: *POH*

Materials: Aircraft POH, example airport from chart supplement

Content

- Charts to measure effect of:
 - *Basic* weight (heavy, or light)
 - Winds
 - Temperature, P.A., D.A.
 - Technique
 - Airplane configuration
 - Grass or asphalt
 - TO/LD, climb, cruise, Xwind
 - Aerodynamics
-

Instructor Actions

- Explain and relate elements to student
 - Ask questions throughout lesson to ensure client engagement
 - Do & tell, Do & student tells, student does & tells, eval
-

Client Actions

- Listen and take notes
 - Answer questions from instructor
 - Ask questions throughout lesson
 - Attempt to make performance calculations
 - Do & tell, Do & student tells, student does & tells, eval
-

Completion standards

- At the end of the lesson, the client is able to calculate performance accurately and correctly, and implement calculations into PIC decisions.

Weight and Balance

Allotted Time: 0.8 Hr

- Objective:** The Client understands the effects and characteristics of C.G location. Client is able to compute weight at balance and can apply ADM to change loading configuration accordingly.

References: C152 POH section 6, PHAK chapter 10

Materials: C152 POH, scratch paper, whiteboard, calculator.

Content

- 4 forces of flight review *WITH C.G.*
 - Loading and weight and balance
 - Forward V.S. Aft *AERODYNAMICS*
 - Locatating Data
 - “The Envelope” - limitations
 - computing CG and Change
 - Verify correct C.G
 - Corrective actions
 - Connecting to ADM (Scenarios to mitigate!)
-

Instructor Actions

- Illustrate 4 forces of flight and C.G movement
 - Describe handling characteristics given varying C.G conditions
 - Demonstrate each step of C.G calculation alongside client.
 - Ask client to attempt a simple C.G calculation
 - Ask client questions throughout lesson to engage client.
 - Ask client scenario based questions demanding exercising PIC level ADM skill.
-

Client Actions

- Listen and take notes
 - Observe instructor demonstration of calculations
 - Apply learned material by calculating and correcting C.G problems
 - Answer questions
 - Ask questions throughout lesson
 - Apply ADM in a scenario given by the instructor
-

Completion standards

- Client is able to determine aircraft C.G. location and use ADM to assess risk associated with C.G locations. Client is able to apply corrective actions to keep CG within limits

Aircraft Limitations

Allotted Time: 0.3 Hr

- Objective:** Client understands aircraft limitations in general and specific limitations of their aircraft. Client can mitigate risk by taking correcting actions before aircraft limitations are exceeded and knows how to handle accidental exceedance of limitations.

References: C152 POH section 2

Materials: C152 POH section 2

Content

- A.M.O
 - Airspeed Limits
 - V_{no} , V_{ne} , V_{fe} , V_a^*
 - Power plant Limits
 - RPM, Oil tempt & Psi
 - Weight Limits
 - Our weight limit
 - “Categories” by weight
 - Center of Gravity Limits
 - Quick review/introduction of W&B lesson
 - Maneuver Limits
 - *Connect to V_a
 - Inverted flight?
 - Load Limits
 - Define “load factor”
 - Fuel Limits (2gal min!)
 - Placards
-

Instructor Actions

- Explain and relate content to client
 - Connect content with other lessons
 - Ask questions to engage client
 - Discuss scenarios with client to use ADM to avoid limitations and how to handle exceedance
-

Client Actions

- Listen and take notes
 - Ask and answer questions to and from instructor
-

Completion standards

- Client is able to explain limitations of their aircraft. Client flies without exceeding aircraft limitations.

National Airspace System (VFR)

Allotted Time: 0.8 Hr

- Objective:** The Client exhibits the ability to: Identify chart symbology and airspace, recall requirements and services available, and apply knowledge in a cross-country scenario as assigned by the instructor.

References: 14 CFR 91, AIM ch3, PHAK

Materials: VFR Sectional, AFD, FAR/AIM, [Slide-Show](#), Whiteboard

Content

- A,B,C,D,E,G Airspace VFR WX minimums, and entry requirements, and pilot/controller responsibilities
 - Special Use Airspace: MCPRAWN
 - wildlife area, TRSA, MTRs, VFR Airways
 - VFR Corridors, VFR flyways, and VFR Trans. Routes
 - SFRAs
 - NOTAM-affecting-airspace
 - VFR sectional and Airport Diagram symbology, to include topography
 - Cross country consideration and risk-management elements
-

Instructor Actions

- Discuss with the student the material with an accompanying Sectional chart and AFD
 - Utilize slide show to illustrate each element
 - Have the learner demonstrate understanding by drawing the airspace dimensions proportionally to one another
 - Ask student the to recall airspace requirements for a particular scenario
 - Demonstrate NOTAM check method
 - Demonstrate Known ATC delays check method
-

Client Actions

- Take notes and answer questions from the instructor
 - Identify local landmarks and topography
 - Draw airspace dimensions and altitudes, and apply Airspace requirements in a scenario given by the instructor
 - Access NOTAM database to identify location of NOTAM airspace
 - Access FAA Known ATC delay faa.gov webpage
-

Completion standards

- At the end of the lesson, the student shall be able to apply knowledge of a VFR sectional chart in flight and during pre-flight planning.

Navigation Systems and Radar Services

Allotted Time: 0.8 Hr

- Objective:** The Client understands and applies ground and space navigation systems. Client understands ATC services and can remedy a loss of spatial-awareness-scenario

References: PHAK ch16

Materials: Sectional chart, VOR Simulator app, whiteboard / scratch paper

Content

- A.M.O
 - Ground based
 - VOR
 - Function
 - Indications
 - Limitations & errors
 - NDB
 - INTRODUCTION ONLY:
 - Function, indications...
 - GPS
 - Function
 - Indications
 - RAIM & WAAS (limits n errors)
 - ATC Radar services & Xpndr, ADSB
 - Lost procedures 5C's
-

Instructor Actions

- Explain and relate content to client
 - Illustrate principles behind each system
 - Demonstrate use of each navigation system
 - Explain ATC services and corrolate information found on charts
 - Give client lost scenario to practice ADM
-

Client Actions

- Listen and take notes
 - Answer and ask questions to and from instructor
-

Completion standards

- At the end of the lesson, Client can explain, use, and track navigation systems.

Navigation and Cross-Country Flight Planning

Allotted Time: 1.5 Hr

- Objective:** The Client understands cross country planning and techniques for navigating along planned routes.

References: *XC Nav-log guide, Sectional chart*

Materials: XC Nav-log, E6-B calculator, sectional chart

Content

- A.M.O
 - Pilotage and Dead Reckoning
 - Why do manually each time?
 - Route selection
 - Altitude selection
 - Power setting selection
 - Calculating the NavLog
 - Whats Flight Plan? Flight Following
 - In-Flight: Planned vs. Actual & Diversions
 - Weather briefing intro
 - SUA and Risk mitigation
-

Instructor Actions

- Explain and relate content to client
 - Ask questions throughout lesson to engage client
 - Demonstrate and ask client to practice calculating various legs of a trip
 - Practice retrieving an actual weather briefing
-

Client Actions

- Listen and take notes
 - Ask questions
 - Answer questions from instructor
 - Attempt calculating Nav log with instructor assistance
 - Apply ADM to make a go-no-go decision based of a weather briefing
-

Completion standards

- Client is able to complete nav log. Client has working understanding of pilotage and dead reckoning (to be applied in flight). Client incorporates risk management *into* flight planning.

14 CFR and Publications

Allotted Time: 30 Hr

- Objective:** Client is knowledgeable on FAA publications. Client has an understanding of how to use each document and where to begin studying

References: ecfr.gov, FAR/AIM, ACS, POH, [SAFO Database](#), [inFO website](#)

Materials: FAR/AIM, Web-browser ^

Content

- FAR/AIM
 - 14 CFR pt. 1, 61, 91
 - E-CFR
 - 49 CFR part 830
 - A.C's
 - INFOs (email direct!)
 - SAFOs (Safety Alert!)
 - ACS
 - POH
 - Sectional & AF/D (*chart supplement*)
-

Instructor Actions

- Explain and relate each document to client, highlighting it's importance
 - Skim through segments of each document with client
 - Advise student on reading recommendations
-

Client Actions

- Listen and take notes
 - Ask questions throughout lesson
 - Skim documents with instructors guidance
 - Study relevant documents before meeting instructor for next lesson
-

Completion standards

- Client has a basic understanding of each document, and with completion of home study of each, can explain each document and memorized several important details of each

Endorsements and Logbook Entries

Allotted Time: 0.5 Hr

- Objective:** Client understands and can determine required logbook entries for their training.

References: AC-61-65, FAR 61 subpart C & E

Materials: Endorsement Cut-outs

Content

- Required student pilot pre-solo knowledge test, solo endorsements, and logbook entries.
 - Other endorsements (Class B, SFAR).
 - Practical test logbook entries for
 - Initial, Additional, pilot, aircraft certification
 - FAA flight review Endorsement
-

Instructor Actions

- Explain and relate endorsements to client
 - Demonstrate insertion of endorsement into logbook
 - Issue endorsement to client as needed
 - Ask questions to review with client
-

Client Actions

- Listen and take notes
 - Answer review questions from instructor
 - Identify endorsements in logbook and/or secure endorsements in logbook
-

Completion standards

- Client is familiar with required endorsements needed for their certificate sought. Client is able to explain required endorsements and verify they possess them.

Night Operations

Allotted Time: 0.00 Hr

- Objective:** Client understands the differences between day versus night flying and is able to mitigate risk involved in night flight.

References: *AFH ch, PHAK ch17*

Materials: Whiteboard, marker

Content

- Review: logging night time
 - Aeromedical (illusion, Hypoxia & eyes)
 - Lighting of Aircraft & Environment
 - Preflight
 - Obstruction clearance
 - Traffic Avoidance
 - Emergency Procedures (field selection)
-

Instructor Actions

- Review night time logging requirements
 - Explain and relate night flight elements to client (bright lights while driving at night?)
 - Ask questions to engage client
-

Client Actions

- Listen and take notes
 - Answer review questions about night time logging req'mts
 - Ask questions to instructor
-

Completion standards

- At the end of the lesson, the client will be able to explain and mitigate risks associated with flying at night. Client will be ready for night flight lessons.

High Altitude Operations - Supplemental Oxygen

Allotted Time: 0.3 Hr

- Objective:** Client has a working understanding of supplemental oxygen and high altitude operations.

References: 14 CFR 91.211

Materials: Whiteboard & marker

Content

- Review Hypoxia
 - Impairment
 - Symptoms
 - Time of Useful Consciousness
 - Supplemental oxygen
 - Requirements
 - Types of Masks
-

Instructor Actions

- Explain and relate content to client (focusing on HIGH altitude)
 - Review Hypoxia concepts with client through use of questions
 - Ask client scenario based question regarding when is supplemental oxygen needed
-

Client Actions

- Listen and take notes
 - Answer questions about Hypoxia related to previous lessons
 - Ask questions
-

Completion standards

- At the end of the lesson, the client is able to explain hypoxia and the basic concept of supplemental oxygen. Client is able to determine if supplemental oxygen is needed in a given scenario.

High Altitude Operations - Pressurization

Allotted Time: 0.3 Hr

- Objective:** Client has a working understanding of pressurized flight.

References: POH

Materials: POH

Content

- Impairment
 - Symptoms of hypoxia
 - Technical Subject Areas
 - Time of useful consciousness (T.U.C.)
 - Effects of rapid decompression on crew and passengers
 - Fundamental concepts
 - Regulations
 - Limitations
 - System
-

Instructor Actions

- Explain and relate content to client
 - Ask questions to engage client
-

Client Actions

- Listen and take notes
 - Answer questions from instructor
-

Completion standards

- Client can explain the basic components and operation of a pressurization system.

Pilot Qualifications

Allotted Time: 0.75 Hr

- Objective:** The Client understands the Certification process for airmen. The Client can determine the documents required to exercise their pilot certificate privileges and how to obtain them.

References: *FAR 61 Subpart C & E*

Materials: [Slideshow](#) as needed, Computer, web access

Content

- TSA Or USA Citizen?
 - Medical Certificate (Mediexpress and AME) & Photo ID
 - Pilot Certificate - IACRA process
 - Endorsements needed
 - Duration & Expiration of Medical
 - Privileges & limitations of YOUR Airman
 - Risk Management and Other Considerations
-

Instructor Actions

- Relate content to what Client already knows (medical standards of driver license?)
 - Explain Differences between Category, Class, Certificate and Rating of airmen certificates
 - Demonstrate use of AME search from database and IACRA application
 - Keep Client engaged through use of questions
 - Ask a scenario based question encompassing a ramp check and regarding pilot documents.
-

Client Actions

- Participate actively by asking questions and answering questions from Instructor
 - Use AME search Database to find an AME in their area
 - Successfully login to IACRA website
-

Completion standards

- At the end of the lesson, Client is able to identify required pilot documents for flight. Client is able to demonstrate their ability through a scenario-based question. Client is prepared to schedule medical exam and submit an IACRA application

Airworthiness requirements

Allotted Time: 1 Hr

- Objective:** The Client understands and can apply airworthiness requirements to *each* pre-flight.

References: 14CFR 91.7, 91.205, 91.207, 91.213, 43

Materials: Aircraft “duty report”

Content

- Define airworthy
 - Aircraft Logbooks?
 - Required inspections (AV1ATED)
 - Special flight permit
 - Preventative maintenance
 - Non-preventative non-maintenance (refilling Oil)
 - Required Documents (ARROW)
 - Where are the documents on our airplane?
 - Placards
 - INOP?
 - EQ list & MEL
 - Introduce TCDS & other additional study
-

Instructor Actions

- Explain and relate content to client
 - Ask questions frequently to engage client
 - With client, gather documents and inspect aircraft logbooks
 - Ask client to read excerpt of POH’s equipment list
 - With client, demonstrate then ask a scenario with INOP equipment
-

Client Actions

- Listen and take notes
 - Practice verifying airworthiness of aircraft with instructor
 - Read excerpt of equipment list in POH
 - Observe and ask questions as instructor explains a scenario involving an INOP equipment
 - Practice a scenario involving INOP equipment in a scenario given by instructor
-

Completion standards

- Client can explain airworthiness and verifies airworthiness in each pre-flight. Client is familiar with “what if” scenarios regarding airworthiness and can mitigate risk in grey areas.

Weather Information

Allotted Time: 1.25 Hr

- Objective:** The Client understands how to use applicable weather information sources and how to interpret weather data.

References: 14 CFR 91.103

Materials: Whiteboard, 1800 WX Brief web browser

Content

- **Definitions:** *Observation, Forecast, Prognosticate, Convective, VFR, IFR, VMC, IMC*
 - **Conditions**
 - Atmospheric composition & stability
 - Temperature & Wind
 - Moisture (water cycle)
 - Visibility
 - Air Masses
 - Fronts
 - Thunderstorms
 - **Sources of weather**
 - AIRMET, SIGMET, METAR, TAF, Winds Aloft, "GFA", PIREP, Charts
 - **Weather briefing**
 - **Intro to personal minimums & "go/no-go"**
-

Instructor Actions

- Explain and relate weather phenomena to client
 - Use whiteboard to illustrate concepts to client
 - Ask questions to engage client
 - Explain and relate each weather source to client
 - Demonstrate and ask client to interpret data from a weather briefing
 - Ask client to write out their personal minimums and make go/no-go decision
-

Client Actions

- Listen and take notes
 - Ask and answer questions to and from instructor
 - Practice weather briefing with assistance of instructor
 - Write out own personal minimums and make go/no-go decision
-

Completion standards

- Client is able to use preferred source to obtain a weather briefing and interpret data to make a go/no-go decision. Client has established a baseline of personal minimums, to be developed as experience develops.