FLIGHT
INSTRUCTOR LESSON PLANS

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INTRODUCTION

Thanks for grabbing your copy of the FlightInsight CFI Lesson Plans! This set of lesson plans can be used to teach Sport, Recreational, Private and Commercial Pilots, as well as Flight Instructor candidates. These are also referenced in our full **Flight Instructor Ground School** course.

The purpose of these lesson plans is to give you guidelines and help organize your thoughts when asked to teach certain tasks and maneuvers on your CFI Checkride. For that reason, we've selected the tasks you'll most likely be asked about on the big day! When developing your own lesson plans later on as a working instructor, you should feel free to expand on what's been provided here using training content such as the Airplane Flying Handbook.

The format of the plans follows what you'll see on the FAA Fundamentals of Instructing (FOI) Knowledge Test. This includes the layout and order of the sections, starting from lesson objective and content, through completion standards students will be judged on.

I hope you enjoy working with these lesson plans! I'd encourage you to use these not as a "be all end all" for your training, but as a jumping off point to developing your own solid catalogue of training material. Happy instructing!

Dan George, CFI
FlightInsight
College Park, Maryland

START CFI GROUND SCHOOL NOW!

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LESSON 1 | STEEP TURNS

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OBJECTIVES

Perform a 360° level turn while maintaining 45° (Private) or 50° (Commercial) bank
Maintain altitude, airspeed, coordination, and control heading on rollout
Commercial only: roll out of first turn and complete a second 360° turn in opposite direction

CONTENT

Division of attention between outside horizon references and instruments
    Establish bank angle by looking outside, confirm with instruments inside
Use of landmarks to determine heading and when to execute rollout from turn
Coordination between elevator, aileron, rudder, and power controls, and trim if desired
Load factor increase with bank angle in level flight, and effect on back pressure required
Overbanking tendency and correction
Anticipate rollout in advance of reaching 360° visual reference landmark
Use of trim if desired to relieve back pressure, use of power if needed to maintain speed/altitude
    Minimum aircraft control: changing one input requires coordination of change with another

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Whiteboard, model aircraft

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Whiteboard relationship between bank angle and load factor. Use model aircraft to show bank angle and altitude maintenance
In flight – demonstrate selecting visual reference, establishing bank angle, maintaining altitude with pitch control, cross checking with instruments. Coach student during practice
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review aerodynamics and relationship of four forces of flight
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should demonstrate competency in maintaining orientation, airspeed within 10 knots, altitude within 100 feet, and headings within 10 degrees, and in making proper correction for loss of altitude or overbanking

ACS Task Reference: Private – V.A.; Commercial – V.A.

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LESSON 2 | SLOW FLIGHT

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OBJECTIVES

Maintain coordinated airplane control at slow airspeed
Use different configurations of flaps and gear in slow flight
Perform turns, climbs and descents, and level flight while maintaining slow airspeed

CONTENT

Importance of mastering slow flight for success in takeoff and landing phases of flight
Relationship of angle of attack and airspeed to overall lift development
Understanding of backside of power curve (power available versus power required)
    In this regime, pitch is used to control airspeed, and power is used to control altitude
Increased effect of slow speed and high pitch attitude on left turning tendencies
Reduced control effectiveness of slower airspeed
    Reduced effectiveness requires greater and more precise control inputs
Recognition of stall indication and appropriate action

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Whiteboard

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Whiteboard thrust and power curves to highlight the region of reversed command aka backside of power curve
In flight – demonstrate selecting visual reference, reducing power and maintaining altitude with pitch, increasing rudder input, increasing power to maintain slow airspeed
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review aerodynamics and relationship of four forces of flight
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should demonstrate competency in selecting entry altitude, establishing and maintaining an airspeed at which any reduction would result in stall warning, maintain altitude within 100 feet, heading within 10°, airspeed within 10 knots, and specified bank angle with 10°.

ACS Task Reference: Private – VII.A.; Commercial – VII.A.

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OBJECTIVES

Recognize an impending stall or a stalled condition and recovery safely
Use different configurations of flaps and gear to enter the stall in a power off or on position

CONTENT

Relationship of critical angle of attack to stall, and how airspeed, attitude, weight, load factor, and relative wind play indirect roles only in determination of angle of attack
Stall entry in landing configuration (power off and flaps and gear down) or takeoff configuration (power on in clean configuration)
Understanding of backside of power curve (power available versus power required)
In this regime, pitch is used to control airspeed, and power is used to control altitude
Increased effect of slow speed and high pitch attitude on left turning tendencies
Reduced control effectiveness of slower airspeed
Reduced effectiveness requires greater and more precise control inputs
Recognition of stall indication and appropriate action
Stall recovery: reduce angle of attack by relieving some elevator back pressure, full power to minimize altitude loss, rudder to stop yaw
Correct for wing dropping by applying opposite rudder

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Whiteboard

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Whiteboard thrust and power curves to highlight the region of reversed command aka backside of power curve
In flight – demonstrate selecting visual reference, reducing power and airspeed with pitch, increasing rudder input, inducing stall and recovering
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review aerodynamics and relationship of four forces of flight
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should demonstrate competency in selecting entry altitude, setting proper power off or on configuration, transition smoothly to attitude as speed is reduced, maintain specified heading within 10°, specified bank angle within 20° or 10° if turning, execute and recover from stall as prescribed in the aircraft POH, return to altitude, heading, and airspeed as specified.

ACS Task Reference: Private – VII.B.&C.; Commercial – VII.B&C.

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OBJECTIVES

Develop skill in planning and following a pattern over the ground
Learn to compensate for wind drift at varying angles of bank

CONTENT

Use of ground references to control path
Observation and control of wind effect
Control of airplane attitude, altitude, and heading

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Chalkboard for preflight discussion

INSTRUCTOR ACTIONS

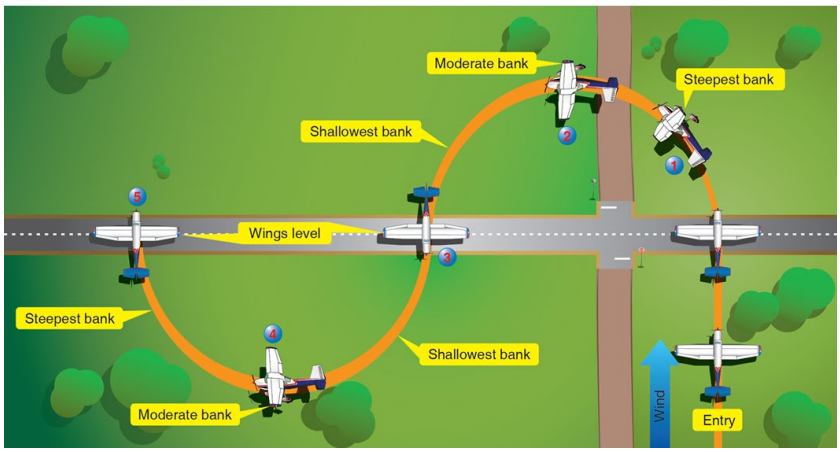
Preflight – discuss lesson objective. Diagram “S” turns, eights along a road, and rectangular course on chalkboard
In flight – demonstrate following a road, “S” turns, eights along a road, and rectangular course
Coach student during practice
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review previous maneuvers including power-off stalls and slow flight
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should demonstrate competency in maintaining orientation, airspeed within 10 knots, altitude within 100 feet, and headings within 10 degrees, and in making proper correction for wind drift



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OBJECTIVES

Transition from maneuvering on the ground (taxi and takeoff run) to achieving flight and climb out

CONTENT

Compute required takeoff distance using performance figures/tables in aircraft POH and current weather and aircraft weight
Taxi into position with nose gear straight and aligned with centerline
Apply full power smoothly, use rudder to maintain centerline with eyes focuses downfield
Gently rotate at proper speed, apply right rudder with back elevator pressure to remain on center
Extra back pressure required for rotation, once mains leave ground, some pressure can be relieved
Set pitch attitude for desired climb airspeed, trim control pressure out
Use minimum aileron input with no wind, use rudder to maintain extended centerline

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Whiteboard, Aircraft POH

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Calculate takeoff distance using POH. Whiteboard out relationship of center of gravity and center of rotation
In flight – demonstrate normal takeoff, describe control inputs used
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review aerodynamics and relationship of four forces of flight
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should demonstrate competency in rotating at recommended speed, set pitch for V_x or V_y. Maintain airspeed +10/-5 knots. Maintain directional control using proper inputs.

ACS Task Reference: Private – IV.A.; Commercial – IV.A.

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LESSON 6 | NORMAL APPROACH AND LANDING

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OBJECTIVES

Maintain proper approach airspeed, glidepath, and attitude in the descent to land
Safely touchdown on the main wheels first, on the runway centerline, with no excessive speed, bouncing, or side loading

CONTENT

Complete prelanding checklist per aircraft POH
Determine proper approach speed based on aircraft POH
Use correct configuration for flaps and gear per the POH
Use power and pitch to maintain airspeed and proper glidepath
Maintain extended centerline of runway using rudder inputs and aileron if needed
Apply trim to relive elevator pressure when at desired airspeed
Reduce throttle to idle at appropriate height above runway
Transition to round out using back elevator pressure, bleeding off airspeed while holding aircraft off
Remain coordinated and on centerline using rudder
Touchdown on mains first, and hold off nose until nose gear settles
Taxi off runway and complete after landing checklists

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Aircraft POH, model aircraft

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Discuss relationship between pitch and power and airspeed and altitude. Use model aircraft to demonstrate landing on mains first and how rudder controls yaw
In flight – demonstrate normal landing, describe control inputs used
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review aerodynamics and relationship of four forces of flight
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should demonstrate competency in maintain proper airspeed with 5 knots, directional control with ruder, and touchdown at proper attitude

ACS Task Reference: Private – IV.B.; Commercial – IV.B.

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LESSON 7 | CROSSWIND TAKEOFF

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OBJECTIVES

Transition from maneuvering on the ground (taxi and takeoff run) to achieving flight and climb out
Apply proper aileron and rudder control to maintain runway centerline and counteract wind drift

CONTENT

Apply proper aileron deflection during taxi (aileron with the wind)
Taxi into position with nose gear straight and aligned with centerline
Apply full power smoothly, use rudder to maintain centerline with eyes focuses downfield
Maintain aileron deflection into the wind during roll, decreasing slightly with speed
Gently rotate at proper speed, apply right rudder with back elevator pressure to remain on center
Bring aileron neutral on rotation while continuing to apply rudder pressure to hold center
Set pitch attitude for desired climb airspeed, trim control pressure out
Use minimum aileron to counteract wind, use rudder to maintain extended centerline

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Model aircraft

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Discuss different objectives of aileron usage and rudder usage.
In flight – demonstrate crosswind takeoff, describe control inputs used
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review aerodynamics and relationship of four forces of flight
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should demonstrate competency in rotating at recommended speed, set pitch for V_x or V_y. Maintain airspeed +10/-5 knots. Maintain directional control using proper inputs.

ACS Task Reference: Private – IV.A.; Commercial – IV.A.

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LESSON 8 | CROSSWIND APPROACH AND LANDING

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OBJECTIVES

Maintain proper approach airspeed, glidepath, and attitude in the descent to land
Safely touchdown on the upwind main wheel first, followed by downwind main, then nose gear
Remain aligned with the runway centerline, with no excessive speed, bouncing, or side loading

CONTENT

Complete prelanding checklist per aircraft POH
Determine proper approach speed based on aircraft POH
Use correct configuration for flaps and gear per the POH
Use power and pitch to maintain airspeed and proper glidepath
Maintain extended centerline of runway using rudder inputs and aileron if needed
Apply trim to relive elevator pressure when at desired airspeed
Reduce throttle to idle at appropriate height above runway
Increase control inputs as speed decreases, rudder for centerline, aileron for wind correction
Transition to round out using back elevator pressure, bleeding off airspeed while holding aircraft off
Touchdown on upwind mains first, and hold off until other wheels touch
Taxi off runway and complete after landing checklists

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Aircraft POH, model aircraft

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Discuss relationship between pitch and power and airspeed and altitude. Use model aircraft to demonstrate landing on upwind main first
In flight – demonstrate normal landing, describe control inputs used
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review aerodynamics and relationship of four forces of flight
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should demonstrate competency in maintaining proper airspeed with 5 knots, directional control with ruder, and touchdown at proper attitude

ACS Task Reference: Private – IV.B.; Commercial – IV.B.

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OBJECTIVES

Descend as rapidly as possible to a lower altitude or to land due to an in-flight emergency

CONTENT

Understand the need for an emergency descent (fire, loss of pressurization, etc)
Descend in a banked turn to allow for clearing of aircraft and obstructions below
Banked turns maintain positive load factors on the aircraft to assist the descent
Use low or idle power, and low propeller pitch (if able) to reduce thrust and add drag
Lower flaps and gear as recommended in the POH to add drag
Maintain proper airspeed control, not exceeding $V_{NE,}$ V_{LE} , or V_{FE} as appropriate

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Aircraft POH

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Discuss need for emergency descents in certain situations.
Discuss when and when not to use flaps and/or gear in descent
In flight – demonstrate emergency descent, describe steps followed
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review aircraft POH for emergency descents
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should demonstrate competency in maintaining bank angle between 30° and 45°, appropriate airspeed within 10 knots and not to exceed limits, level off at safe altitude within 100 feet.

ACS Task Reference: Private – IX.A.; Commercial – IX.A.

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LESSON 10 | EMERGENCY APPROACH & LANDING

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OBJECTIVES

Simulate an approach and landing after a full lose of power during cruise flight

CONTENT

Recognize the simulated or real signs of engine failure
Immediately pitch aircraft for best glide speed V_g per aircraft POH
Identify ideal spot for forced landing (relatively flat, not too soft, few obstructions, etc)
Begin to troubleshoot cause of engine trouble and attempt to restart
Once committed to landing, configure aircraft as needed
Communicate emergency if time allows, squawk 7700.
Secure aircraft for forced landing per POH (fuel sources, electrics, doors, etc)

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Whiteboard, Aircraft POH

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Discuss situations where engine failure can occur. Discuss proper terrain selection, emergency landing checklists, and memory items
In flight – demonstrate simulated engine failure, describe steps followed
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review aircraft POH for emergency landings
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should demonstrate competency in maintaining recommended best glide speed within 10 knots, configuration of aircraft per POH, selecting appropriate forced landing spot, maneuvering aircraft to landing spot, and completing appropriate checklists

ACS Task Reference: Private – IX.B.; Commercial – IX.B.

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LESSON 11 | UNUSUAL ATTITUDE RECOVERY

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OBJECTIVES

Recognize the entry to an unusual aircraft attitude and safely recover by reference to instruments

CONTENT

Understand the effect the vestibular system has on spatial disorientation in IMC
Understand phenomena such as “the leans” and “graveyard spiral”
Recognize instrument indications of a descending spiral (increasing airspeed) and a climbing spiral (decreasing airspeed) and ignore bodily sensations of turning
Identify risks associated with each attitude: in a descent – excessive load factor and overspeed, in a climb, stall/spin danger
Execute step by step process of recovery from each attitude – descending: power idle, roll wings level, increase bank to horizon; climb: increase power, decrease bank to horizon, wings level
Return to normal cruise flight referencing instruments

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Model aircraft

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Discuss aeromedical factors effecting orientation in IMC. Demonstrate step by step recovery from each attitude using model aircraft
In flight – demonstrate recovery from each attitude. Take controls and place aircraft into unusual attitude before having student take controls and perform recovery referencing instruments
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review aeromedical factors
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should recognize unusual flight attitude, and perform correct, coordinated and smooth flight control application to recover while staying within aircraft’s flight limitations

ACS Task Reference: Private – VIII.E.; Commercial – N/A

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LESSON 12 | CHANDELLES

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OBJECTIVES

Gain the maximum altitude for a given bank angle and power setting during a 180° turn
Use precise aircraft control to maximize climb performance through multiple phases of flight

CONTENT

Execute clearing turns and bring aircraft to V_A or cruise, whichever is slower
Divide the task into two halves, the first 90° of the turn, and the second 90°
First 90° of turn involves establishing a constant bank angle with continuously increasing pitch attitude, while full power is applied
Second 90° involves constant pitch attitude while a slow roll out of turn is commenced
Aircraft should finish maneuver turned 180° around, at minimum controllable airspeed
If aircraft pitch is too low, maneuver will end with excessive airspeed, if too high, aircraft could stall prior to reaching 180° point
Entry to maneuver involves near simultaneous application of bank (~30°), then pitch, then power
Max pitch is reached at 90° point, then maintained through rest of maneuver by increasing elevator back pressure to compensate for reduced airspeed
Rudder coordination throughout maneuver must be maintained
Rate of rollout must be smooth and continuous, or aircraft will not roll out on 180° point
On completion of chandelle, return to level pitch and accelerate to cruise
Demonstrate at least one chandelle to both right and left side

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Whiteboard

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Discuss steps to complete and common errors
In flight – demonstrate chandelle. Describe steps followed
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review maneuver procedure in Airplane Flying Handbook
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should establish appropriate entry configuration, power, and airspeed, establish bank angle approximately 30°, simultaneously apply power and pitch to maintain a smooth climbing turn through first 90°, beginning a coordinated rollout of turn finishing with 10° of the 180° point, just above stall speed, and resuming normal straight and level flight

ACS Task Reference: Private – N/A; Commercial – V.C.

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LESSON 13 | LAZY EIGHTS

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OBJECTIVES

Develop proper coordination of flight controls across a wide range of airspeeds and attitudes
Make two slow, controlled climbing and descending 180° turns while constantly changing controls

CONTENT

Execute clearing turns and bring aircraft to V_A or cruise, whichever is slower
Identify landmarks for 45°, 90°, 135°, and 180° points of maneuver
First 90° of turn involves a climb, while second 90° involves a descent and return to original altitude
Begin maneuver with slow increase of pitch and bank, to approximately 15° bank angle
At 45° point, reach maximum pitch up attitude, as bank angle begins increasing to about 30°
At 90° point, minimum speed, maximum altitude, and level pitch attitude reached
Aircraft begins descent while bank is gradually reduced, max pitch down reached at 135° point
At 180° point, level flight is achieved at original entry altitude and airspeed
Maintain straight and level flight momentarily, then begin a second lazy eight to opposite side
Constant changing of control inputs is required to maintain coordination and pitch and bank control
Slow entry and execution is essential to aid in keeping coordination and precise control
Aircraft should transition from pitch up to pitch down attitude at 90° point, aided by relieving back elevator pressure slightly
Rudder pressure must constantly change to compensate for changing p-factor effects at different airspeeds and pitch attitudes, every change of control inputs requires change in rudder

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Whiteboard

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Discuss steps to complete and common errors
In flight – demonstrate lazy eights. Describe steps followed
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review maneuver procedure in Airplane Flying Handbook
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should establish appropriate entry configuration, power, and airspeed, maintain coordinated flight throughout maneuver, accomplish approximately 30° bank at steepest, constantly changing pitch and roll rate and airspeed, end maneuver at 180° point with 10° at entry altitude within 100 feet, at entry airspeed within 10 knots

ACS Task Reference: Private – N/A; Commercial – V.D.

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OBJECTIVES

Determine the stall characteristics of an aircraft at speeds greater than the +1G stall speed
Understand the relationship between bank angle, airspeed, elevator control, and stalls

CONTENT

Execute clearing turns and bring aircraft to V_A or cruise, whichever is slower
Roll the aircraft into a coordinated, level turn at approximately 45° bank angle (like a steep turn)
Smoothly apply back elevator pressure to increase AoA, decrease airspeed, and cause stall
Recognize indications of imminent stall and recover by relieving elevator back pressure to break stall, roll wings level, and resume straight and level flight
Maintain rudder coordination at all times to prevent stall from developing into spin

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Whiteboard, aircraft POH

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Demonstrate relationship between bank angle and stall speed on whiteboard. Discuss steps to complete and common errors
In flight – demonstrate accelerated stall. Describe steps followed
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review maneuver procedure in Airplane Flying Handbook
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should establish and maintain coordinated turn in 45° bank, increasing elevator back pressure smoothly until an impending stall is reached. Acknowledge and promptly recover from stall. Maintain coordination throughout.

ACS Task Reference: Private – N/A; Commercial – VII.D.

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OBJECTIVES

Rapidly dissipate substantial altitudes while remaining over a selected spot on the ground
Maintain constant radius around a point while in a descent

CONTENT

Execute clearing turns and bring aircraft to V_A or cruise, whichever is slower
Select an entry altitude that will allow for three complete 360° turns while descending, and recovery no lower than 1,500 AGL
Close throttle to idle and complete other steps as recommended by POH to initiate descent
Apply back elevator pressure to decelerate to glide speed while establishing a banked turn around selected point on ground
Clear the throttle at end of each 360° turn to prevent engine problems with prolonged idle
Maintain constant airspeed throughout maneuver
Adjust bank angle to account for wind to maintain constant distance from point

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Whiteboard, aircraft POH

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Discuss steps to complete and common errors
In flight – demonstrate entry to steep spiral. Describe steps followed
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review maneuver procedure in Airplane Flying Handbook
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should establish and maintain a bank angle not to exceed 60°, maintain constant radius around selected ground point, make three full 360° turns around point while in constant airspeed descent, complete maneuver on 360° point within 10° no lower than 1,500 AGL

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LESSON 16 | EIGHTS ON PYLONS

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OBJECTIVES

Demonstrate advanced ground reference abilities by maintaining a turn around a point (pylon) with a constant sight picture

Demonstrate understanding of the concept of pivotal altitude

CONTENT

Execute clearing turns and bring aircraft to V_A or cruise, whichever is slower

Determine pivotal altitude based on airspeed, wind, and the formula ground speed ÷ 11.3

Begin maneuver with quartering tailwind and pylon approaching upwind wing

Execute turn on pylon, maintaining constant sight picture by adjusting altitude

Minimum pivotal altitude achieved when pointed directly into wind, also at this point, aircraft will be abeam both pylons

Depart first pylon on heading that will put second pylon off of opposite wing after short period of straight and level flight

Execute turn around second pylon

SCHEDULE

Preflight discussion (10 minutes)

Instructor demonstrations (25 minutes)

Learner practice (45 minutes)

Postflight critique (10 minutes)

EQUIPMENT

Whiteboard

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Introduce and whiteboard concept of pivotal altitude. Discuss steps to complete and common errors

In flight – demonstrate eights on pylons. Describe steps followed

Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions

In flight – review maneuver procedure in Airplane Flying Handbook

Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should select pylons that will allow for maneuver to be executed safely at pivotal altitudes with short period of straight and level flight to transit between them. Establish correct bank angle to maintain constant sight picture of pylons, not to exceed 40°. Avoid slips and skids in maintaining sight picture, adjusting pivotal altitude with elevator control.

ACS Task Reference: Private – N/A; Commercial – V.E.

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LESSON 17 | 180° POWER-OFF APPROACH

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OBJECTIVES

Demonstrate judgement in estimating distances and glide ratios on power off approach to land

CONTENT

Maneuver aircraft onto downwind leg of traffic pattern and complete prelanding checklist
Close throttle to idle, and establish best glide speed
Reference selected landing spot on runway and make base and final turns to establish glidepath
Configure landing gear and flaps as needed
Employ altitude management tools such as forward slips and/or s turns to lose altitude
Touchdown as close as possible to landing spot without landing short of it

SCHEDULE

Preflight discussion (10 minutes)
Instructor demonstrations (25 minutes)
Learner practice (45 minutes)
Postflight critique (10 minutes)

EQUIPMENT

Whiteboard

INSTRUCTOR ACTIONS

Preflight – discuss lesson objective. Whiteboard typical path to runway in pattern. Discuss steps to complete and common errors
In flight – demonstrate power off 180°. Describe steps followed
Postflight – critique student performance and make study assignment

STUDENT ACTIONS

Preflight – discuss lesson objective and questions
In flight – review maneuver procedure in Airplane Flying Handbook
Postflight – ask pertinent questions during instructor debrief

COMPLETION STANDARDS

Student should touchdown at proper pitch attitude, within 200 feet beyond or on (not short of) selected point with no side drift and with the airplane's long axis aligned with and over the runway centerline

ACS Task Reference: Private – N/A; Commercial – IV.M.

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