

Instrument Pilot Airplane
Flight Training Syllabus
AC 61-27C & FAA-S-8081-4B

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Instrument Flight Training Syllabus
AC 61-27C & FAA-S-8081-4B

OBJECTIVES training Syllabus provides the student pilot with a detailed summary of specific knowledge and skill required by the FAA for certification for an Instrument Rating in Airplanes.

COMPLETION STANDARDS: You show by written record, and will demonstrate through oral and by practical tests, that you meet the required aeronautical skill, knowledge, experience, and performance standards to be recommended to a designated pilot examiner for an Instrument Arplane Rating.

TO THE CFI: This training system contains the specific task requirements of the **FAA-S-8081-4B Instrument Rating Practical Test Standards**, combined with the Instrument Flight Instructor's lesson plan found in **AC61-27C, Instrument Flying Handbook**. This training system helps the instructor ensure that all specific requirements of **FAR 61.65 (b)(1-4)** and **FAR 61.65 (c)(1-5)** are met. This will create a high degree of structure by providing an outline for study, a practical checklist, and a record of training. Review the topics by reading the appropriate reference materials, or by talking with your instructor. This document follows the "Building Block" approach to training as specified in **AC 60-14 Aviation Instructor's Handbook**, which means that elements of any flight lesson that are not accomplished during the flight should be completed as soon as possible, and each lesson can be repeated as often as necessary, but no element of the next stage should be introduced until all the elements of the previous stage have been finished.

TO THE STUDENT: During the preflight ground instruction lessons, your flight instructor should: 1- Explain the purpose of each flight maneuver, or pilot operation; 2- Give you an accurate, comprehensive description of the maneuver or operation, including the objectives and completion standards; 3-

Use instructional aids, as appropriate; and 4- Describe the correction for common errors you are likely to make while learning or performing the maneuver or operation.

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STAGE I

LESSONS 1 - 16

ATTITUDE INSTRUMENT FLYING

OBJECTIVES: These lessons involve instrument scan, instrument interpretation, and positive aircraft control. Although you learn these skills separately, and in a deliberate sequence, the objective of this stage will be your ability to integrate these skills into unified, smooth, positive control responses to maintain any prescribed flight path.

COMPLETION STANDARDS:

You will demonstrate positive aircraft control, solely by reference to instruments, in a variety of circumstances. You will be able to maintain specified altitude within 100 feet, assigned heading within 10 degrees, and

STAGE II

LESSONS 17 - 30

STAGE II INSTRUMENT APPROACHES, HOLDING PATTERNS & REVIEW

OBJECTIVES: These lessons are to develop the skills necessary for performing instrument approaches, and are repeated as necessary to gain proficiency.

STAGE III

LESSONS 31-35

IFR CROSS-COUNTRY

These lessons usually require 4 or 5 flights, and involve Cross-Country IFR under a variety of circumstances, including a PAR approach, if available.

STAGE IV

PROCEDURES REVIEW LESSONS

These are review lessons which should be repeated as often as necessary.

QUIZZES

These are written quizzes, given at the completion of each stage.

ENDORSEMENTS

These endorsements are to be affixed to the student's logbook, and signed by the instructor, after successful completion of this course of instruction.

INSTRUMENT RATING TRAINING REQUIREMENTS
(Excerpt from FAR Part 61.65)

GROUND INSTRUCTION (FAR 61.65)(b)(1-4)

You are to have received ground instruction, or have logged home study in at least the following areas of aeronautical knowledge:

- (1) The regulations of FAR 61.65 that apply to flight under IFR conditions, The Airman's Information Manual, and the IFR air traffic system and procedures;
- (2) Dead reckoning appropriate to IFR navigation, IFR navigation by radio aids using the VOR, ADF, and ILS systems, and the use of IFR charts and instrument approach plates;
- (3) The procurement and use of aviation weather reports and forecasts, and the elements of forecasting weather trends on the basis of that information and personal observation of weather conditions; and
- (4) The safe and efficient operation of airplanes under instrument weather conditions.

FLIGHT INSTRUCTION (FAR 61.65)(c)(1-5)

You must present a logbook record certified by an authorized flight instructor showing that you have received instrument flight instruction in an airplane in the following pilot operations, and have been found competent in each of them:

- (1) Control and accurate maneuvering of an airplane solely by reference to instruments.
- (2) IFR navigation by the use of the VOR and ADF systems, including compliance with air traffic control instructions and procedures.

(3) Instrument approaches to published minimums using the VOR, ADF and ILS systems.

(4) Cross-Country flying in simulated or actual IFR conditions, on Federal airways or as routed by ATC, including one such trip of at least 250 nautical miles, including VOR, ADF and ILS approaches at different airports.

(5) Simulated emergencies, including the recovery from unusual attitudes, equipment or instrument malfunctions, loss of communications, missed approach procedures, and engine-out emergencies if a multiengine airplane is used.

FLIGHT EXPERIENCE: (FAR 61.65)(e)(1-3)

To obtain a Instrument Rating, you must have:

(1) At least 125 hours total flight time, of which at least 50 hours are as pilot in command in Cross-Country flight (at least 50 nm flights);

(2) 40 hours of simulated or actual instrument time, of which no more than 20 hours instruction in a simulator.

(3) 15 hours of instrument flight instruction are required, including at least 5 hours in an airplane.

Start _____
End _____
Total _____

N _____
Date ____ / ____ / ____

Refer to attitude indicator when making pitch corrections, taking precession error into consideration.)

STAGE I FUNDAMENTALS OF INSTRUMENT FLIGHT

Lesson #1. ORIENTATION FLIGHT AND REVIEW OF THE BASICS

_____ (1) Preflight Discussion & Review Steep (Constant Altitude) Turns, MCA, Stalls (VR & IR) and Recoveries from unusual flight attitudes.

_____ (2) Airplane Systems Related To IFR Operations, Instrument Cockpit Check

_____ (3) Aircraft Flight Instruments And Navigation Equipment

_____ (4) Straight And Level Flight

_____ (5) Attitude Indicator Errors

_____ (6) Review MCA

_____ (7) Review Stalls (VR) & (IR)

_____ (8) Review Unusual Attitude Recoveries

_____ (9) Review Constant Airspeed Climbs & Descents

_____ (10) Perform Steep Turns. Enter A Turn Of More Than A Standard Rate (Altimeter is primary for pitch. Maintain altitude. Airspeed is primary for power. Add power when airspeed indicator shows a need for it. Cross-check attitude indicator, altimeter, and vertical speed indicator for pitch control.

_____ (11) Perform Steep Turns, Partial Panel (Use turn needle to maintain a constant rate of turn. Control pitch by reference to altimeter/VSI combination.)

_____ (12) Recovery Should Be Smooth With A Normal Rate Of Roll (Since vertical lift increases, pitch and power should be reduced as required to maintain altitude and airspeed.)

_____ (13) Practice Steep Turns With All Available Instruments

_____ (14) Without Attitude And HDG. Indicator

_____ (15) Postflight

_____ (16) Next Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #2. INSTRUMENT COCKPIT CHECK & PITCH CONTROL

- _____ (1) Preflight Discussion
- _____ (2) Preflight Preparation
- _____ (3) Obtaining Weather
- _____ (4) Visual Inspection
- _____ (5) Airplane Systems Related To IFR Operations
- _____ (6) Cockpit Management
- _____ (7) Aircraft Flight Instruments And Navigation Equipment
- _____ (8) Instrument Cockpit Check
- _____ (9) Straight And Level Flight
- _____ (10) Attitude Indicator Errors
- _____ (11) Comparison of Instrument Indication & Pitch Attitude
- _____ (12) Maintain Level Flight With Attitude Indicator, Return To Level Flight (After moderate climbs & descents)
- _____ (13) Trim
- _____ (14) Change Pitch Attitude And Show Altimeter Indication

- _____ (15) Cross-check Attitude Indicator & Altimeter
- _____ (16) Practice Maintaining Constant Altitude With Altimeter And Attitude Indicator
- _____ (17) Practice Returning To Original Altitude After Loosing Or Gaining 50' (Change pitch attitude no more than 1/2 bar)
- _____ (18) Vertical Speed Indicator Shows Trend Before Altimeter Shows A Climb Or Descent
- _____ (19) Caution Not To Chase Needle
- _____ (20) Point Out That Relationship Between VSI & Attitude Indicator Depends On Airspeed
- _____ (21) Show A 200 FPM Climb Or Descent (At low airspeed using 1/2 bar width on attitude indicator.)
- _____ (22) Correct For Altitudes 100' Or Less With No More Than 200 FPM Climb Or Descents
- _____ (23) Practice Attitude Control With VSI Only
- _____ (24) Practice Attitude Control With AI And VSI
- _____ (25) Practice Attitude Control With AI, VSI And Altimeter
- _____ (26) Climb 100' At A Rate Of 200 FPM
- _____ (27) Resume Level Flight, Descend At 200 FPM
- _____ (28) Cross-Check ALT, AI, & VSI To Maintain Level Flight

_____ (29) Point Out That Airspeed Remains Constant At Constant Power When Altitude Is Constant

_____ (30) Make Small Pitch Changes, And Point Out Slow Changes In Airspeed

_____ (31) Make Extreme Pitch Changes, And Point Out Fast Changes In Airspeed

_____ (32) Practice Holding Constant Airspeed In Level Flight (With Constant Power) By Use Of Airspeed Indicator Alone

_____ (33) Practice Constant Airspeed With All Available Instruments

_____ (34) Now Without Attitude Indicator (Instructor Should Aid Student In Rudder And Bank Control.)

Start _____
End _____
Total _____

N _____
Date ____ / ____ / ____

Lesson #3. BANK CONTROL

_____ (1) Preflight Discussion

_____ (2) Roll From One Bank To Another Observing Banking Scale To Indicate Degree Of Bank

_____ (3) Precession Of Horizon Bar After A Steep 180 Turn

_____ (4) Practice Bank Control Using Attitude Indicator Only Then Using Heading And Attitude Indicator

_____ (5) Heading Indicator Corrections (Banks not to exceed number of degrees turned. (Ex. if heading error is 10 degrees, do not exceed a 10 degree bank when correcting.)

_____ (6) Include Heading Indicator In Cross-Check To Maintain Straight-And Level Flight. Practice Straight Flight With Heading Indicator Alone, Then Include Attitude Indicator

_____ (7) Practice Straight Flight With All Pitch Instruments

_____ (8) Turn Needle Shows Rate Of Turn Regardless Of Angle Of Bank (As a demonstration, fly along some straight ground reference, then establish a banked attitude, using rudder to prevent any yaw or turn. Point out that turn needle indicates straight flight and not banked attitude of aircraft.)

_____ (9) Maintain Straight And Level Flight (Without Heading Indicator) Use Turn Needle And Magnetic Compass Only

_____ (10) Demonstrate A 2 Degree Bank Showing Turn Needle Deflection And Heading Indicator Changes

_____ (11) Make Standard Rate Turns, Slipping And Skidding, (point out that ball on low side of center indicates that wing is low relative to position of turn needle.)

_____ (12) Practice Bank Control Using Turn And Slip Indicator (VR & IR)

_____ (13) Practice Maintaining Straight And Level Flight With All Available Pitch And Bank Instruments

_____ (14) Postflight Procedures

_____ (15) Next Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #4. POWER CONTROL AND TRIM

- _____ (1) Preflight Discussion
- _____ (2) Ground Phase
- _____ (3) Practice Maintaining Altitude And Trimming Off Pressure
- _____ (4) Increase Power, Maintaining Straight & Level Flight
- _____ (5) Decrease Power, Maintaining Straight & Level Flight
- _____ (6) Use Aileron And/Or Rudder Trim, With Power Changes (If aircraft is so equipped.)
- _____ (7) Determine Parameters For MAP, RPM, PITCH SETTING, AIRSPEED, & VSI (Use power chart on next page.)
- _____ (8) Lead the Level-offs by 10 percent of the Vertical Speed.
- _____ (9) Postflight
- _____ (10) Next Lesson Preview

Aircraft N _____

NOTES:

	AIRSPEED	VSI	MAP	RPM
PITCH				
CLIMB				
CRUISE				
CRUISE DESCENT				
APPROACH & HOLDING				
APPROACH DESCENT				
NON-PRECISION. DESCENT				

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #5. CONSTANT AIRSPEED. CLIMBS AND DESCENTS

- _____ (1) Preflight Discussion
- _____ (2) Ground Phase
- _____ (3) Decrease Airspeed. From Cruise To Approaching And Holding
- _____ (4) Increase Airspeed. From Approaching To Cruise Maintaining Altitude & HDG. (Pitch must be changed, note attitude indicator acceleration and deceleration errors.)
- _____ (5) Decrease Airspeed. From Cruise To Approach Maintaining Altitude & HDG.
- _____ (6) Use Airspeed. Indicator For Primary Power Control
- _____ (7) Practice Changing Airspeed. In Straight & Level Flight Without HDG. Indicator, Then Without Attitude And HDG. Indicators
- _____ (8) Enter Constant Airspeed. Climb From Cruise Airspeed.
- _____ (9) Demonstrate Use Of VSI As An Aid In Maintaining Airspeed. (By adjusting pitch attitude on attitude indicator to change VSI 200 FPM to gain or loose 10 Kts.)
- _____ (10) Level-Off From Climbs At Cruise Airspeed. (Lead altitude by 10 percent VSI shown, i.e., for 500 FPM, use 50 foot lead. (altimeter is primary for pitch as level-off is started.) Leave

power at climbing power until airspeed approaches normal cruise airspeed, adjusting pitch as necessary to maintain altitude. Emphasize proper use of trim.)

- _____ (11) Enter Climbs From Normal Cruise Airspeed. And Level Off At Normal Cruise Airspeed. With All Available Instruments, then Without Attitude And HDG. Indicators.
- _____ (12) Reduce To Climb Airspeed, And Enter A Climb From Climb Airspeed. (As power is increased, airspeed is primary for pitch. Use relationship between airspeed and vertical speed for pitch control.)
- _____ (13) Level-Off From Climbs At Climb Airspeed. With All Available Instruments (Lead altitude by 10 percent of VSI. As level-off is started, altimeter becomes primary pitch.)
- _____ (14) Practice Entering Climbs From Climb Airspeed. And Level-Off At Climb Airspeed. (With all available instruments, then Without Attitude And HDG. Indicators.)
- _____ (15) Enter A Descent By Reducing To Descent Power, Maintaining Altitude Until Airspeed. Approaches Descending Airspeed. (Airspeed. is primary for pitch.)
- _____ (16) Demonstrate Use Of VSI As An Aid In Maintaining Desired Airspeed. (By adjusting pitch to change VSI 20 FPM to gain or lose 5 Kts. airspeed.)
- _____ (17) Level-Off From Descents At Cruise Airspeed. (VSI is primary for pitch until normal lead for level-off is reached, then altimeter is primary for pitch.)
- _____ (18) Level-Off From Descents At Descent Airspeed. (Approx. 50' above desired altitude, advance power to hold airspeed constant. Simultaneously adjust pitch attitude to maintain airspeed. As level-off is started, altimeter is primary for pitch, and airspeed becomes primary for power.)

_____ (19) Practice Level-Offs From Descents At Cruising
And Descending Airspeed. With Full & Partial Panel

_____ (20) Postflight Procedures

_____ (21) Next Lesson Preview

Start _____
End _____
Total _____

N _____
Date ____ / ____ / ____

Lesson #6. TURNS AND HDG. INDICATOR TURNS

_____ (1) Preflight Discussion _____ (2) Ground Phase

_____ (3) Enter A Level Flight Turn, And Maintain Constant Airspeed. (As **turn is established**, attitude indicator is primary for bank. When approximate **desired bank is reached**, **turn needle is primary for bank**. altimeter is primary for pitch, airspeed indicator is primary for power.)

_____ (4) Pitch Must Be Changed To Maintain Constant Altitude

_____ (5) If Necessary, Hold Slight Aileron And Rudder Pressure Opposite Direction Of Turn To Maintain Desired Bank (Maintain a constant bank angle.)

_____ (6) Adjust Power As Necessary To Maintain A Constant Airspeed.

_____ (7) Recover To Straight And Level Flight (Explain that roll-out is accomplished by reference to attitude indicator. When normal lead for roll-out is reached, heading indicator if available, becomes primary for bank. Adjust pitch attitude and power as necessary to maintain desired altitude and airspeed.)

_____ (8) Enter A Turn With Rudder Alone (Show resulting skid, and effect on airspeed. aircraft is turning faster than bank indicates.)

_____ (9) Enter A Turn With Aileron Alone (Show yaw caused by aileron drag, and how coordinated use of rudder and ailerons eliminates its effect.

_____ (10) Find Angle Of Bank Needed For A Standard Rate Turn (Divide airspeed by 10 and add 1/2 to answer, i.e., 100 divided by 10 + 5 = 15 Degrees Bank.)

_____ (11) Turns Low Cruise Speed

_____ (12) Turns Normal Cruise Speed

_____ (13) Turns High Cruise Speed

_____ (14) Practice Turns With Inoperative Gyroscopic Attitude & HDG. Indicators

_____ (15) Practice Climbing And Descending Turns, With Level-Offs At Various Airspeeds, Full Panel

_____ (16) Practice Climbing And Descending Turns Without Gyroscopic HDG. And Attitude Indicator

_____ (17) Turns To Predetermined Headings (With a rollout lead of 1 degree for each 2 degrees of bank being held. Never exceed in bank number of degrees to be turned. Never exceed a standard rate turn.)

_____ (18) Without Attitude Indicator, Change HDG. 30 Degrees (Use a standard rate turn.)

_____ (19) Practice Changing HDG. Less Than 15 Degrees

_____ (20) Practice Turns To Various Headings With All Instruments & Without Attitude Indicator

_____ (21) Postflight

_____ (22) Next Lesson Preview _____ (23) Quiz 1

Notes:

Start _____ N _____
End _____
Total _____ Date _ / _ / _

Lesson #7. INSTRUMENT TAKEOFF

_____ (1) Preflight Discussion

_____ (2) Ground Phase

_____ (3) Instrument Takeoffs. Hold aircraft stationary with brakes and advance power to a setting that will provide partial rudder control. Advance throttle smoothly to obtain rudder effectiveness, then release brakes and apply full power. Heading indicator is primary for directional control. Climb-out is made at a constant airspeed.)

_____ (4) Practice Instrument Takeoffs Without Hood

_____ (5) Practice Instrument Takeoffs With Hood

Start _____ N _____
End _____
Total _____ Date _ / _ / _

Lesson #8. RATE CLIMBS AND DESCENTS

_____ (1) Preflight Discussion

_____ (2) Instrument Takeoff

_____ (3) Climb At A Definite Indicated Rate (From climb airspeed, advance power to establish climb at 500'/min. Simultaneously adjust pitch to maintain constant airspeed. Log power setting required for this.)

_____ (4) Level Off From A Climb At A Definite Indicated Rate (Follow same procedure that was described for level-offs from constant airspeed climbs.)

_____ (5) Enter A Descent At A Definite Indicated Rate (Adjust pitch attitude to maintain a constant airspeed. Log power setting required for this.)

_____ (6) Level Off From A Descent At A Definite Indicated Rate (Follow the same procedure that was described for level-offs from constant airspeed descents.)

_____ (7) Calibrating VSI To Establish Definite Absolute Rates (By establishing a climb or descent of 500'/min.)

_____ (8) Practice Calibrating VSI During Both Climbs And Descents

_____ (9) Climbs At A Definite Absolute Rate (Establish climbing airspeed. As clock passes a cardinal point, enter climb using same technique that has been described for entry into a climb at a definite indicated rate. Use first 30 sec. to establish proper vertical speed and trim. Check clock and altimeter every 15 sec. thereafter for 125 feet of altitude change. Show student how to correct any errors.)

_____ (10) Level-Offs From Climb At A Definite Absolute Rate (Follow same procedure that was described for level-off from a constant airspeed climb.)

_____ (11) Postflight

_____ (12) Next Lesson Preview

Notes:

Start _____
End _____
Total _____

N _____
Date _ / _ / _

Lesson #9. CHANGE OF AIRSPEED. IN TURNS

_____ (1) Preflight Discussion

_____ (2) Instrument Takeoff

_____ (3) Change From Normal To Low Cruise Airspeed.
(After Turn Is Established Altimeter is primary for pitch, turn
needle is primary for bank. While airspeed is changing, MAP or
TACH is primary for power. Trim as airspeed changes.)

_____ (4) Change From Low To Normal Cruise After Turn Is
Established (Same as above, except power must be overshoot 3"
to 5" (200 - 300 RPM), pitch is lowered to maintain altitude,
bank is increased to maintain standard rate turn.)

_____ (5) Change Airspeed. And Enter Turn Simultaneously

_____ (6) Practice Changing Airspeed. In Turns After Turn
Is Established

_____ (7) Practice Changing Airspeed. In Turns Entering
Turn And Changing Airspeed. Simultaneously (With all available
instruments, and without attitude and heading indicators.)

_____ (8) Postflight, Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #10. CLIMBS AND DESCENTS TO
PREDETERMINED ALTITUDES AND HEADINGS.

- _____ (1) Preflight Discussion
- _____ (2) Instrument Takeoff
- _____ (3) Change To Climbing Airspeed. In
Straight-And-Level Flight
- _____ (4) When Clock Second Hand Indicates A Cardinal
Point Change Pitch, Bank And Power Simultaneously, And
Enter A Standard Rate Climbing Turn
- _____ (5) Control Bank As In Timed Turns, Checking HDG.
Every 15 Sec. After 1st 30 Seconds
- _____ (6) Control Pitch As In Rate Climbs, Checking
Altitude Every 15 Sec. After 1st 30 Seconds
- _____ (7) Roll Out On Correct HDG. And Level-Off On
Correct Altitude Regardless Of Time
- _____ (8) Descend To A Predetermined Altitude And HDG.
- _____ (9) Practice without attitude and heading indicators.)
- _____ (10) Postflight
- _____ (11) Next Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #11. VERTICAL S, S1 & S2

_____ (1) Preflight Discussion

_____ (2) Instrument Takeoff

_____ (3) Vertical S (From an exact altitude and climbing or descending airspeed., adjust power and pitch to enter a climb or descent. As Power is adjusted in entry, airspeed. is primary for pitch. As VSI approaches 500 FPM, VSI becomes primary for pitch and remains so until reversal of vertical direction is started. As VSI reaches 500 FPM airspeed. again becomes primary for power. As reversal of VSI is started, airspeed. becomes primary for pitch and remains so until VSI approaches desired rate of 500 FPM. Trim and Cross-Check are important.)

_____ (4) Vertical S-1 (Enter in a climbing or descending turn.)

_____ (5) Reverse Direction Of Turn With Each Return To Entry Altitude.

_____ (6) VERTICAL S-2 (direction of turn is reversed with each reversal of vertical direction.)

_____ (7) V. S, S1, and S-2 (With all instruments, & without AI.

_____ (8) Postflight, Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #12. MAGNETIC COMPASS

_____ (1) Preflight Discussion includes North Undershoot = Latitude + 1/2 the bank angle. South Overshoot = Latitude + 1/2 the bank angle.

_____ (2) Review As Necessary

_____ (3) Demonstrate Northerly Turning Error (Fly north long enough for compass to settle down, wings level. Enter a turn to west. compass immediately indicates a turn in opposite direction. Return to a north heading. Enter a turn to east. compass indicates a turn to west. Return to a north heading.)

_____ (4) Enter A Very Shallow Banked Turn To West (Compass indicated momentarily that a straight course is being maintained. Wings must be level to avoid turning errors. Repeat demonstration in a shallow turn to east.)

_____ (5) Enter A Steep Turn (compass lags excessively, and may swing completely around in opposite direction of turn.)

_____ (6) Demonstrate Southerly Turning Error (Fly a south heading and let compass settle down. Enter a turn to west. compass indicates a much faster turn in same direction. Return to south heading. Enter a turn to east. compass indicates a much faster turn in same direction. Return to a south heading. Wings must be level to avoid compass turn errors.)

_____ (7) Acceleration & Deceleration Error With Power Changes (Fly a heading of east. Increase airspeed in level flight. Compass indicates a turn toward north. Reduce airspeed in level flight. Compass indicates a turn toward south.)

_____ (8) Acceleration & Deceleration Error Constant Power (Fly a heading of east or west. At a constant power setting first lower, then raise nose.)

_____ (9) Fly A HDG. Of West, And Repeat Above Demonstration (magnitude of error depends on rate of acceleration or deceleration. To read compass accurately, airspeed must be constant. Acceleration and deceleration error are not present in constant airspeed climbs and descents.)

_____ (10) Show That Acceleration And Deceleration Errors Are Not Present On North And South Headings

_____ (11) Show That Turn Errors Are Not Present On East And West Headings

_____ (12) Turns To Magnetic Compass Headings (Turn to a heading of north, using 15 to 18 degrees of bank. Lead heading an amount equal to latitude plus half angle of bank. Repeat same, turning to a heading of south (15 to 18 degrees of bank. Overshoot heading an amount equal to latitude minus half angle of bank.)

_____ (13) From South, Then From North, Turn To A HDG. Of East (Lead heading approx. 5 degrees when turning from a heading of south to east, and approx. 10 degrees when turning from a heading of north to east.)

_____ (14) Turn To A HDG. Of West, Using Procedure Given Above

_____ (15) Show That Lag Or Lead Must Be Interpolated When Turning To Intermediate Headings

_____ (16) Practice Making Turns To Magnetic Compass Headings Without HDG. Indicator, Then Without HDG. Indicator And Attitude Indicator

_____ (17) Postflight _____ (18) Next Lesson Preview

Start _____
End _____
Total _____

N _____
Date ____ / ____ / ____

Lesson #13. TIMED TURNS

_____ (1) Preflight Discussion

_____ (2) Review As Necessary

_____ (3) Calibration Of Turn Needle (With all instruments available, establish a standard rate turn as indicated by turn needle. As clock second hand passes a cardinal point, check heading indicator for a turn of 30 degrees each 10 seconds (no lag, since timing is started after turn is established). Make necessary changes in indicated rate (needle position) to produce a standard rate turn.)

_____ (4) Calibrate Needle Both Right And Left

_____ (5) Note Exact Deflection Of Turn Needle And Use Corrected Deflection (If any) For All Timed Turns

_____ (6) Timed Turns With All Instruments Available (Enter a standard rate turn when clock second hand passes a cardinal point. first 30 second is used to establish turn properly. check heading indicator to see whether rate of turn is proper. It should indicate a turn of 90 degrees minus number of degrees lag for angle of bank used (LAG WILL BE APPROX. ONE-HALF DEGREE OF BANK.) Demonstrate how angle of bank is increased or decreased to compensate for any error. After first 30 seconds, heading indicator should be checked against clock every 15 seconds. Time is started when pressure is applied to roll into a turn and stopped when pressure is applied to roll out. With all instruments available, roll out on desired heading regardless of time.)

_____ (7) Timed Turns Without HDG. Indicator And Attitude Indicator (Enter a standard rate turn using needle as primary bank instrument while in a turn. Turn for 30 seconds, holding a constant turn needle deflection. At end of 30 seconds, roll out of turn at same rate you made roll-in. When wings are level and turn needle is centered, magnetic compass should indicate a turn of 90 degrees. For small changes in heading use a half-standard-rate turn. (1/2 NEEDLE WIDTH ON 2 MIN. NEEDLE, OR 1 NEEDLE WIDTH ON 4 MINUTE NEEDLE.))

_____ (8) Practice Making Timed Turns At Different Airspeeds (With all available instruments.)

_____ (9) Without HDG. Indicator

_____ (10) Without HDG. Indicator And Attitude Indicator

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #14. RECOVERY FROM UNUSUAL FLIGHT ATTITUDES

_____ (1) Preflight Discussion Rules Airspeed Needle

Increasing:

Close Throttle.

Level Wings.

Increase Pitch.

Airspeed Needle Decreasing:

Full Throttle.

Decrease Pitch.

Level Wings.

_____ (2) Review As Necessary

_____ (3) Practice Recovery From Nose-Low Unusual Attitudes With All Available Instruments

_____ (4) Now Without Attitude And HDG. Indicator

_____ (5) Practice Recovery From Nose-High Unusual Attitudes With All Available Instruments

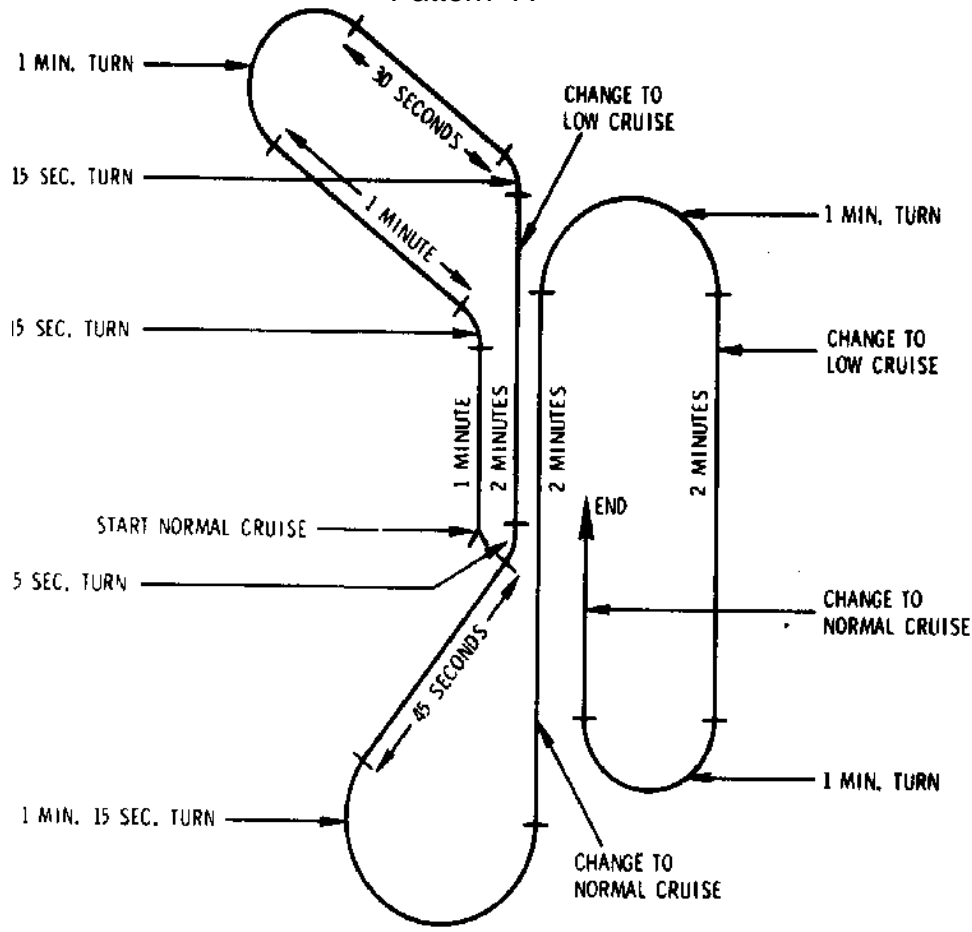
_____ (6) Without Attitude And HDG. Indicator

_____ (7) Postflight

_____ (8) Next Lesson Preview

NOTES:

Pattern "A"



Start _____
End _____
Total _____

N _____
Date ____ / ____ / ____

_____ (8) Perform Pattern Without Attitude And HDG.
Indicator

_____ (9) Postflight

_____ (10) Next Lesson Preview

Lesson #15. PATTERN "A"

_____ (1) Preflight Discussion (purpose of this pattern is to further develop ability to control aircraft without deliberate thought. These patterns help prepare student for holding patterns and procedure turns. Initial practice should be on cardinal headings for simplicity.)

_____ (2) Review As Necessary

_____ (3) Maneuver Should Be First Performed With All Available Instruments, Then On Partial Panel

_____ (4) Demonstrate First Three Turns, Then Have Student Continue (Timing should start when clock is on a cardinal point, preferably 12 o'clock position.)

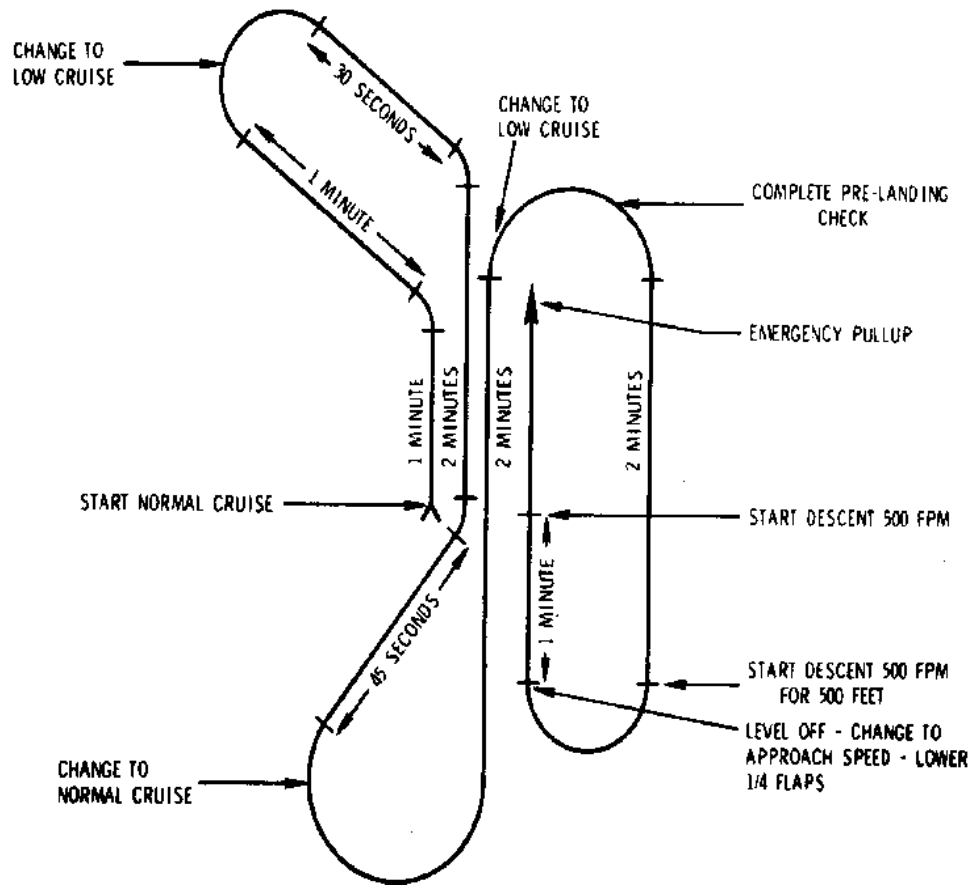
_____ (5) Timing Is Consecutive In That Time For Each Leg Is Started When Control Pressure Is Applied To Recover From Preceding Turn

_____ (6) After Recovery From Turns, Allow Sufficient Time For Compass To Stop Oscillating, Then Note HDG. And Correct If Necessary (An exception is 30 Sec. leg. If you note an error in heading here, compensate for it by lengthening or shortening time allotted for next turn.)

_____ (7) Observe Turn Needle And Magnetic Compass Closely (To correct a heading, use a timed turn. For small heading changes use half-standard rate turns. Efficient Cross-Check is required during airspeed changes so that corrections may be applied immediately.)

NOTES:

Pattern "B"



Start _____
End _____
Total _____

N _____
Date ____ / ____ / ____

Lesson #16. PATTERN "B"

_____ (1) Preflight Discussion (Pattern "B" like previous one, is to further develop pilot's ability to control aircraft without deliberate thought. These patterns help prepare student for holding patterns and procedure turns. Initial practice should be on cardinal headings for simplicity.)

_____ (2) Use All Available Instruments (Do not demonstrate unless absolutely necessary.)

_____ (3) Roll Out On Headings Regardless Of Time (When changing airspeed in turns, simultaneously change bank and power, also change pitch, if applicable.)

_____ (4) Descending Final Turn Is Made At An Absolute Rate

_____ (5) Final Descent Is Made To A Minimum Altitude (As set by instructor, or until time expires, whichever comes first.)

_____ (6) Emergency pull-up Is Made As A Normal Go-Around Procedure, Climbing To Original Altitude

_____ (7) Postflight. Quiz 2

STAGE 2 After Successful Completion.

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

STAGE II
INSTRUMENT APPROACHES & HOLDING

Lesson #17. INTERCEPTING AND TRACKING
VOR/VORTAC RADIALS

- _____ (1) Preflight Discussion
- _____ (2) Review Attitude Instrument Flying As Necessary
- _____ (3) VOR Approach Procedures
- _____ (4) Approach Clearances
- _____ (5) Compare VOR and LOC Approach Procedures
- _____ (6) Tune And Correctly Identify Facility, Intercept
Desired Radial
- _____ (7) Maintain Airspeed. Within 5 Kts., Altitudes Within
50' and Headings or Bearings Within 5 Degrees
- _____ (8) Apply Proper Corrections To Maintain Radial (less
than full-scale deflection of CDI or within 10% if RMI.)
- _____ (9) Determine Aircraft's Position Relative To Facility
- _____ (10) Recognize Receiver Or Facility Failure, And
Report To ATC
- _____ (11) Postflight
- _____ (12) Next Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #18. INTERCEPTING AND TRACKING DME ARCS

- _____ (1) Preflight Discussion
- _____ (2) Review Attitude Instrument Flying As Necessary
- _____ (3) DME ARC Approach Procedures
- _____ (4) Approach Clearances
- _____ (5) Compare VOR and LOC Approach Procedures
- _____ (6) Tune And Correctly Identify Facility, Intercept
Desired ARC
- _____ (7) Maintain Airspeed. Within 5 Kts., Altitudes Within
50' and Headings or Bearings Within 5 Degrees
- _____ (8) Apply Proper Corrections To Maintain DME ARC
(Within 1 NM)
- _____ (9) Recognize Receiver Or Facility Failure, And
Report To ATC
- _____ (10) Postflight
- _____ (11) Next Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #19. INTERCEPTING AND TRACKING NDB BEARINGS

- _____ (1) Preflight Discussion
- _____ (2) Review Attitude Instrument Flying As Necessary
- _____ (3) Tune And Correctly Identify Facility
- _____ (4) Set Volume To Allow Constant Monitoring Of Facility
- _____ (5) Determine Relative Bearing Of NDB Facility
- _____ (6) Intercept A Specific Bearing To Of From NDB (Use appropriate intercept procedures.)
- _____ (7) Maintain Airspeed. Within 5 Kts., Altitudes Within 50' and Headings or Bearings Within 5 Degrees
- _____ (8) Determine Aircraft's Position Relative To Facility
- _____ (9) Recognize Receiver Or Facility Failure, And Reports Failure To ATC
- _____ (10) Postflight
- _____ (11) Next Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #20. INTERCEPTING AND TRACKING THE ILS LOCALIZER

- _____ (1) Preflight Discussion
- _____ (2) Review Attitude Instrument Flying As Necessary
- _____ (3) ILS Approach Procedures
- _____ (4) Approach Clearances
- _____ (5) Compare VOR and LOC Sensitivity (Loc. is 4 X Greater.)
- _____ (6) Tune And Correctly Identify Facility, Intercept Desired Course
- _____ (7) Maintain Airspeed. Within 5 Kts., Altitudes Within 50' and Headings or Bearings Within 5 Degrees
- _____ (8) Apply Proper Corrections To Maintain Radial (less than full-scale deflection of CDI or within 10% if RMI.)
- _____ (9) Recognize Receiver Or Facility Failure, And Report To ATC
- _____ (10) Postflight
- _____ (11) Next Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #21. MISSED APPROACH PROCEDURES

Combine This Lesson With Approach Procedures and Holding Patterns. Practice to Proficiency.

_____ (1) Preflight Discussion

_____ (2) Initiate Missed Approach Promptly (apply power, establishing a climb attitude, and reduce drag in accordance with manufacturer's recommendations.)

_____ (3) Report To ATC & Comply With Published Or Alternate Missed Approach Procedure

_____ (4) Advise ATC Anytime Aircraft Is Unable To Comply With A Clearance, Restriction, Or Climb Gradient

_____ (5) Follow Appropriate Checklist Items Appropriate To Go-Around Procedure

_____ (6) If Appropriate, Request Clearance To Alternate Airport, Clearance Limit, Or As Directed

_____ (7) Maintain Recommended Airspeed. Within 5 Kts., Heading, Course Or Bearing Within 5 Degrees, and Altitude(s) Within 50'

_____ (8) Postflight Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #22. VOR HOLDING PROCEDURES

- _____ (1) Preflight Discussion
- _____ (2) Review As Necessary
- _____ (3) Comply With Departure, Enroute And Arrival Clearances
- _____ (4) Change To Holding Speed When 3 Minutes Or Less From, But Prior To Arriving At Holding Fix
- _____ (5) Use An Entry Procedure That Ensures Aircraft Remains Within Holding Pattern Airspace
- _____ (6) Comply With ATC Reporting Requirements
- _____ (7) Use Proper Timing Criteria
- _____ (8) Comply With Pattern Leg Lengths When A DME Distance Is Specified (If DME Equipped.)
- _____ (9) Use Proper Wind Correction, And Arrive Over Fix At A Specified Time
- _____ (10) Maintain Airspeed. Within 5 Kts., Altitudes Within 50' and Headings, Bearings or Radials Within 5 Degrees
- _____ (11) Missed Approach Procedures
- _____ (12) Postflight Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #23. CIRCLING APPROACH PROCEDURE

- _____ (1) Preflight Discussion
- _____ (2) Review As Necessary
- _____ (3) Comply With Departure, Enroute and Arrival And Clearances
- _____ (4) Use Sound Judgment And Knowledge Of Aircraft's Maneuvering Capabilities
- _____ (5) Adhere To Restrictions And Instructions Issued By ATC
- _____ (6) Do Not Descend Below Circling Altitude Or Exceed Visibility Criteria Until In A Position From Which Descent To A Normal Landing Can Be Made
- _____ (7) Missed Approach Procedures From a Circling Approach
- _____ (8) Postflight
- _____ (9) Next Lesson Preview

NOTES:

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #24. LANDING FROM A STRAIGHT-IN
OR CIRCLING APPROACH PROCEDURE

- _____ (1) Preflight Discussion
- _____ (2) Review As Necessary
- _____ (3) Comply With Departure, Enroute and Arrival And Clearances
- _____ (4) Exhibit Knowledge Of Pilot's Responsibilities, Environmental, Operational And Meteorological Factors
- _____ (5) Transition At DH, MDA Or VDP To Visual Flight Condition
- _____ (6) Adhere To ATC Advisories (NOTAMS, wind shear, wake turbulence, runway surface, braking conditions, other operational considerations.)
- _____ (7) Complete Appropriate Checklist Items For Pre-Landing And Landing Phase
- _____ (8) Maintain Positive Aircraft Control Throughout Complete Landing Maneuver
- _____ (9) Postflight
- _____ (10) Next Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #25. NO-GYRO RADAR VECTORING AND APPROACH

_____ (1) Preflight Discussion

_____ (2) Review As Necessary

_____ (3) Comply With Departure, Enroute And Arrival Clearances

_____ (4) Properly Set Communications & Navigation Equipment

_____ (5) Acknowledge All Headings, Altitudes, Altimeter Settings

_____ (6) Comply With Controller's Instructions Or Query ATC

_____ (7) Make All Turns While Being Vectored At Standard Or Half- Standard Rate When Directed By Controller

_____ (8) Maintain Airspeed. Within 5 Kts., Altitudes Within 50' and Headings, Bearings or Radials Within 5 Degrees

_____ (9) Postflight

_____ (10) Next Lesson Preview

NOTES:

Start _____
End _____
Total _____

N _____
Date _ / _ / _

Lesson #26. VOR/VORTAC INSTRUMENT APPROACH PROCEDURE

- _____ (1) Preflight Discussion
- _____ (2) Review As Necessary
- _____ (3) Establish two-way Communications With ATC As Appropriate To Phase Of Flight Or Approach Segment
- _____ (4) Use Proper Radio Communications Phraseology And Technique
- _____ (5) Comply With All And Clearances As Issued By ATC Or By Instructor
- _____ (6) Advise ATC Anytime Aircraft Is Unable To Comply With A Clearance
- _____ (7) Establish Appropriate Aircraft Configuration And Airspeed.
- _____ (8) Complete Aircraft Checklist Items Appropriate To Phase Of Flight
- _____ (9) Maintain Prior To Beginning Final Approach Segment, Altitudes Within 50 Feet, Headings Within 5 Degrees, And Airspeed. Within 5 Kts.
- _____ (10) Select, Tune, Identify And Confirm Operational Status Of Ground And Aircraft Navigational Equipment To Be Used For Approach Procedure

_____ (11) Apply Necessary Adjustments To Published MDA And Visibility Criteria For Aircraft Approach Category When Required Such As:
FDC And Class II NOTAMS
Inoperative Aircraft And Ground Navigation Equipment
Inoperative Visual Aids (Landing Environment)
National Weather Service Reporting Factors And Criteria

_____ (12) Establish A Rate Of Descent That Will Ensure Arrival At MDA With Aircraft Continuously In A Position From Which Descent To A Landing Can Be Made At A Normal Rate Using Normal Maneuvers

_____ (13) While On Final Approach Segment, Allow Less Than A full-scale Deflection Of CDI Or 5 Degrees In Case Of An RMI, And Maintain Airspeed. Within 5 Kts.

_____ (14) Execute Missed Approach Procedure When Required Visual References For Intended Runway Are Not Distinctly Visible & Identifiable At Missed Approach Point

_____ (15) Execute A Normal Landing From A Straight-In Or Circling Approach When Instructed

_____ (16) Postflight, Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #27. NDB HOLDING PROCEDURES

- _____ (1) Preflight Discussion
- _____ (2) Tune, Identify and Monitor
- _____ (3) Comply With Departure, Enroute And Arrival Clearances
- _____ (4) Change To Holding Speed When 3 Minutes Or Less From, But Prior To Arriving At Holding Fix
- _____ (5) Use An Entry Procedure That Ensures Aircraft Remains Within Holding Pattern Airspace
- _____ (6) Comply With ATC Reporting Requirements
- _____ (7) Use Proper Timing Criteria
- _____ (8) Use Proper Wind Correction, And Arrive Over Fix At A Specified Time
- _____ (9) Maintain Airspeed. Within 5 Kts., Altitudes Within 50' and Headings, and Bearings Within 5 Degrees
- _____ (10) Postflight
- _____ (11) Next Lesson Preview
- _____ (12) Quiz 3

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #28. NDB INSTRUMENT APPROACH PROCEDURE

- _____ (1) Preflight Discussion
- _____ (2) Review As Necessary
- _____ (3) Establish Two-way Communications With ATC As Appropriate To Phase Of Flight Or Approach Segment
- _____ (4) Use Proper Radio Communications Phraseology And Technique
- _____ (5) Comply With All Clearances As Issued By ATC Or Instructor
- _____ (6) Advise Anytime You Are Unable To Comply With A Clearance
- _____ (7) Establish Appropriate Aircraft Configuration & Airspeed.
- _____ (8) Complete Aircraft Checklist Items Appropriate To Phase Of Flight
- _____ (9) Maintain Prior To Beginning Final Approach Segment, Altitudes Within 50' HDG. Within 5 Degrees, Airspeed. Within 5 Kts.
- _____ (10) Select, Tune, Identify Confirm and Monitor Operational Status Of Ground And Aircraft Navigational Equipment To Be Used For Approach Procedure

_____ (11) Apply Necessary Adjustments To Published MDA And Visibility Criteria For Aircraft Approach Category When Required Such As:
FDC And Class II NOTAMS
Inoperative Aircraft And Ground Navigation Equipment
Inoperative Visual Aids (Landing Environment)
National Weather Service Reporting Factors And Criteria

_____ (12) Establish A Rate Of Descent That Will Ensure Arrival At MDA With Aircraft Continuously In A Position From Which Descent To A Landing Can Be Made At A Normal Rate Using Normal Maneuvers

_____ (13) Maintain, While On Final Approach Segment, A Deviation Of Not More Than 5 Degrees From Desired Bearing

_____ (14) Maintain Airspeed. Within 5 Kts. MDA, Within +50' -0' To Missed Approach Point

_____ (15) Execute Missed Approach Procedure When Required Visual References For Intended Runway Are Not Distinctly Visible & Identifiable At Missed Approach Point

_____ (16) Execute A Normal Landing (Straight-In Or Circling)

_____ (17) Postflight

_____ (18) Next Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #29. ILS/MLS INSTRUMENT APPROACH PROCEDURE

- _____ (1) Preflight Discussion
- _____ (2) Review As Necessary
- _____ (3) Air Traffic Control Clearances And
- _____ (4) Establish Two-way Communications With ATC As Appropriate To Phase Of Flight Or Approach Segment
- _____ (5) Use Proper Radio Communications Phraseology And Technique
- _____ (6) Comply With All Clearances As Issued By ATC Or Instructor
- _____ (7) Advise ATC Anytime Aircraft Is Unable To Comply With A Clearance
- _____ (8) Establish Appropriate Aircraft Configuration And Airspeed.
- _____ (9) Complete Aircraft Checklist Items Appropriate To phase Of Flight
- _____ (10) Maintain Prior To Beginning Final Approach Segment, Altitudes Within 50' HDG. Within 5 Degrees, Airspeed. Within 5 Kts.
- _____ (11) Select, Tune, Identify And Confirm Operational Status Of Ground And Aircraft Navigational Equipment To Be Used For Approach Procedure

_____ (12) Apply Necessary Adjustments To Published DH And Visibility Criteria For Aircraft Approach Category When Required Such As: FDC And Class II NOTAMS
Inoperative Aircraft And Ground Navigation Equipment
Inoperative Visual Aids (Landing Environment)
National Weather Service Reporting Factors And Criteria

- _____ (13) Maintain Desired Airspeed. Within 5 Kts.
- _____ (14) Avoid Descent Below DH Before Initiating Missed Approach Procedure Or Transitioning To A Normal Landing Approach
- _____ (15) Immediately Execute Missed Approach Procedure When At DH, Required Visual References For Intended Runway Are Not Distinctly Visible And Identifiable
- _____ (16) Transition To A Normal Landing Approach When Aircraft Is Continuously In A Position From Which A Descent To A Landing Can Be Made At A Normal Rate Of Descent Using Normal Maneuvers
- _____ (17) Postflight, Lesson Preview

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #30. INTERSECTION HOLDING PROCEDURES

- _____ (1) Preflight Discussion
- _____ (2) Tune, Identify, and Monitor the Identifier, if Necessary
- _____ (3) Comply With Departure, Enroute And Arrival Clearances
- _____ (4) Change To Holding Speed When 3 Minutes Or Less From, But Prior To Arriving At Holding Fix
- _____ (5) Use An Entry Procedure That Ensures Aircraft Remains Within Holding Pattern Airspace
- _____ (6) Comply With ATC Reporting Requirements
- _____ (7) Use Proper Timing Criteria
- _____ (8) Comply With Pattern Leg Lengths When A DME Distance Is Specified (If DME Equipped.)
- _____ (9) Use Proper Wind Correction, And Arrive Over Fix At A Specified Time
- _____ (10) Maintain Airspeed. Within 5 Kts., Altitudes Within 50' and Headings, Bearings or Radials Within 5 Degrees
- _____ (11) Postflight Lesson Preview
- _____ (12) Quiz 4 Stage III Begins.

Start _____
End _____
Total _____

N _____
Date _ / _ / _

STAGE III IFR CROSS-COUNTRY

Lesson #31. IFR SHORT CROSS-COUNTRY

_____ (1) Preflight Discussion

_____ (2) Obtaining Weather Information. Determine if an alternate airport is required.

_____ (3) Airplane Systems Related To IFR Operations. Windscreen, airframe, propeller, intake, fuel system, the Pitot-static system and leading edge devices.

_____ (4) IFR Departure, Enroute & Arrival Clearances and Procedures

_____ (5) Calculating ETAs & ETE

_____ (6) Enroute Navigation On Victor Airways

_____ (7) ILS Approach

_____ (8) VOR Approach

_____ (9) NDB Approach

_____ (10) Other Approach

_____ (11) Missed Approach Procedures

_____ (12) Postflight

_____ (13) Preview of Next Lesson

Start _____
End _____
Total _____

N _____
Date ____ / ____ / ____

Lesson #32. PAR APPROACH (Combine with Cross-Country GRF- Gray Army Airfield, near Tacoma, WA. Military airfield, prior permission required for landing, so a low-approach only is recommended.)

_____ (1) Preflight Discussion

_____ (2) Student Reads Back All Headings And Altitudes Given And Acknowledges All Other Transmissions Except When Instructed Otherwise By Final Controller

_____ (3) Perform Pre-Landing Check and Reduce Airspeed. To Approach Speed And Set Flaps To Approach Setting (Maintain altitude and heading while changing altitude and flap setting.)

_____ (4) Make All HDG. Changes At Standard Rate (Except during no-gyro approaches in final approach, when half-standard rate turns should be used.)

_____ (5) Enter A 500 FPM Descent When So Instructed (If above or below glide path, make a pitch correction and monitor airspeed for need of power change. When changing headings, do not exceed in bank angle number of degrees to be turned.)

_____ (6) Practice PAR Approaches With Full And Partial Panel

_____ (7) Postflight

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #33. IFR CROSS-COUNTRY

- _____ (1) Preflight Discussion
- _____ (2) Obtaining Weather Information.
- _____ (3) Airplane Systems and Equipment Related To IFR Operations.
- _____ (4) IFR Departure, Enroute & Arrival Clearances and Procedures
- _____ (5) Calculating ETAs & ETE
- _____ (6) Enroute Navigation On Victor Airways
- _____ (7) ILS Approach
- _____ (8) VOR Approach
- _____ (9) NDB Approach
- _____ (10) Other Approach
- _____ (11) Missed Approach Procedures
- _____ (12) Postflight
- _____ (13) Preview of Next Lesson

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #34. IFR LONG CROSS-COUNTRY

- _____ (1) Preflight Discussion
- _____ (2) Obtaining Weather Information.
- _____ (3) Airplane Systems and Equipment Related To IFR Operations.
- _____ (4) IFR Departure, Enroute & Arrival Clearances and Procedures
- _____ (5) Calculating ETAs & ETE
- _____ (6) Enroute Navigation On Victor Airways
- _____ (7) ILS Approach
- _____ (8) VOR Approach
- _____ (9) NDB Approach
- _____ (10) Other Approach
- _____ (11) Missed Approach Procedures
- _____ (12) Postflight
- _____ (13) Preview of Next Lesson

Start _____ N _____
End _____
Total _____ Date ____ / ____ / ____

Lesson #35. EMERGENCY PROCEDURES

- _____ (1) Preflight Discussion
- _____ (2) Obtaining Weather Information.
- _____ (3) Airplane Systems Related To IFR Operations.
- _____ (4) Aircraft Flight Instruments And Navigation
Equipment
- _____ (5) Airplane Systems Related To IFR Operations
- _____ (6) IFR Departure, Enroute & Arrival Clearances and
Procedures
- _____ (7) Calculating ETAs & ETE
- _____ (8) VOR Approach
- _____ (9) AFD Approach
- _____ (10) ILS Approach
- _____ (11) Postflight
- _____ (12) Next Lesson Preview

STAGE IV
REVIEW LESSONS

Name _____ Date _____ Hours _____

Start _____ Off _____ On _____ In _____

⇒ Preflight Discussion

⇒ IFR Flight Plan, Clearances or VFR Wx & IFR Procedures
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Normal / Max Performance / Crosswind Takeoff
(Heading +-5 degrees, Airspeed +-5 Kts.)

⇒ Engine Failure During Takeoff Before Vmc
(Simulated & Calculated 50 percent below Vmc)

⇒ Engine Failure After Lift-Off (Simulated Vy, >400AGL Vx+5
then Vy HDG. 10° ASPD 5Kt.

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Unusual Attitude Recovery
(Airspeed Increasing = Power, Level Wings, Raise Pitch;
Airspeed Decreasing = Power, Lower Pitch, Level Wings.)

⇒ Maneuvering During Slow Flight (Alt+-100' Hdg. +-10° Aspd.
+10 -0 Bank +-10°.)

⇒ Holding Patterns

⇒ Stalls (At least one while turning in 20° Max Bank +-10°)

⇒ Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts.
Altitude +-100' Heading +-10°)

_____ ILS _____ LOC _____ BC _____ COUPLED

_____ WAAS _____ RNAV _____ VISUAL

_____ CIRCLE _____ LANDINGS _____ NIGHT

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-
100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing (1.3Vso +10 -5 Kts. with
wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude
+100'-0' Airspeed +-5 Kts.)

⇒ Short Field Approach and Landing (1.3Vso +10 -5 Kts. with
wind/gust factor applied, TD<=200')

⇒ Emergency Procedures

⇒ Other (specify) _____

⇒ Post Flight

STAGE IV
REVIEW LESSONS

Name _____ Date _____ Hours _____

Start _____ Off _____ On _____ In _____

⇒ Preflight Discussion

⇒ IFR Flight Plan, Clearances or VFR Wx & IFR Procedures
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Normal / Max Performance / Crosswind Takeoff
(Heading +5 degrees, Airspeed +-5 Kts.)

⇒ Engine Failure During Takeoff Before Vmc
(Simulated & Calculated 50 percent below Vmc)

⇒ Engine Failure After Lift-Off (Simulated Vy, >400AGL Vx+5
then Vy HDG. 10° ASPD 5Kt.

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Unusual Attitude Recovery
(Airspeed Increasing = Power, Level Wings, Raise Pitch;
Airspeed Decreasing = Power, Lower Pitch, Level Wings.)

⇒ Maneuvering During Slow Flight (Alt+-100' Hdg. +-10° Aspd.
+10 -0 Bank +-10°.)

⇒ Holding Patterns

⇒ Stalls (At least one while turning in 20° Max Bank +-10°)

⇒ Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts.
Altitude +-100' Heading +-10°)

_____ ILS _____ LOC _____ BC _____ COUPLED

_____ WAAS _____ RNAV _____ VISUAL

_____ CIRCLE _____ LANDINGS _____ NIGHT

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-
100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing (1.3Vso +10 -5 Kts. with
wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude
+100'-0' Airspeed +-5 Kts.)

⇒ Short Field Approach and Landing (1.3Vso +10 -5 Kts. with
wind/gust factor applied, TD<=200')

⇒ Emergency Procedures

⇒ Other (specify) _____

⇒ Post Flight

STAGE IV
REVIEW LESSONS

Name _____ Date _____ Hours _____

Start _____ Off _____ On _____ In _____

⇒ Preflight Discussion

⇒ IFR Flight Plan, Clearances or VFR Wx & IFR Procedures
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Normal / Max Performance / Crosswind Takeoff
(Heading +5 degrees, Airspeed +5 Kts.)

⇒ Engine Failure During Takeoff Before Vmc
(Simulated & Calculated 50 percent below Vmc)

⇒ Engine Failure After Lift-Off (Simulated Vy, >400AGL Vx+5 then Vy HDG. 10° ASPD 5Kt.

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Unusual Attitude Recovery
(Airspeed Increasing = Power, Level Wings, Raise Pitch;
Airspeed Decreasing = Power, Lower Pitch, Level Wings.)

⇒ Maneuvering During Slow Flight (Alt+-100' Hdg. +-10° Aspd. +10 -0 Bank +-10°.)

⇒ Holding Patterns

⇒ Stalls (At least one while turning in 20° Max Bank +-10°)

⇒ Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100' Heading +-10°)

_____ ILS _____ LOC _____ BC _____ COUPLED

_____ WAAS _____ RNAV _____ VISUAL

_____ CIRCLE _____ LANDINGS _____ NIGHT

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100'-0' Airspeed +5 Kts.)

⇒ Short Field Approach and Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=200')

⇒ Emergency Procedures

⇒ Other (specify) _____

⇒ Post Flight

QUIZ I-1

Preparation for Instrument Approaches

Student's Name

Date

Use additional sheets or reverse side to answer these questions.

1. Name the four segments of a typical instrument approach, and the purpose of each segment.
2. What does the phrase "Cleared for the approach" mean?
3. What do the letters in the triangles "T" and "A" on the (NOS) approach chart mean?
4. Where is the MAP in a precision and non-precision approach?
5. Where are 4 different types of marker beacon transmitters located? What are they referred to as?
6. At what point during a circling approach may you descend below the MDA?
7. What determines aircraft approach category?
8. What are the difference between Contact and Visual Approaches?
9. What type of course reversal is authorized if a teardrop or holding pattern reversal is shown?
10. What is the meaning of a Cruise Clearance?
11. Is it permissible to land when the visibility is below minimums, if you have the runway environment in sight?
12. List ten elements that comprise the Runway Environment. (FAR 91.175)

QUIZ I-2

Instrument Procedures

Instructor's Name

Student's Name

Date

1. Name nine additional pieces of equipment or instruments (beyond those necessary for VFR day & night flights) which are necessary for IFR:

2. How is the missed approach started if you lose visual contact during a circling approach?

3. During a non-precision approach, what guidelines should you follow during your descent from the FAF to the MAP?

4. What are the rules pertaining to the operation of aircraft under IFR in icing conditions. (FAR 91.527)

What are the rules pertaining to lost communications while IFR, regarding:

5. *Route;*

6. *Altitude;*

7. *Leave Clearance Limit (fix from which approach begins;)*

8. *Leave Clearance Limit (not a fix from which approach begins;)*

9. Which items of an ILS have authorized substitutes? What are the substitute items?

10. When should you begin the final descent to the MDA during an ASR or PAR approach?

QUIZ I-3

Air Traffic IFR Procedures

Student's Name

Date

1. Compare and contrast Visual Approaches with Contact Approaches. Is 91.155 compliance required for Visual Approaches?
2. If one or more approach components are inoperative, how do you determine the adjustments required in approach minimums?
3. List the items in a typical IFR departure clearance, in the normal sequence in which they are given.
4. What reports to ATC are you required to make in a radar environment? (91.183)
5. What reports to ATC are you required to make in a *non-radar* environment?
6. On a direct route segment, what points are considered to be compulsory reporting points?
7. When may you cancel IFR?
8. What procedure should you follow if you are unable to contact ATC on an assigned frequency?
9. What types of weather briefings should you request, and what are the circumstances under which they should be requested?
10. With an approach plate, discuss your actions and ATC communications during all phases of the instrument approach.

QUIZ I -4

Instrument Cross-Country & Emergency Procedures

Student's Name

Date

Use additional sheets of paper to answer these questions.

1. Discuss three situations where you would consider the necessity for an alternate airport even when the forecast weather conditions of the 1-2-3 rule (FAR 91.167) would technically relieve you from the requirement to file one.
2. What's the relationship between the side of the aircraft (left or right) and the location of VOR stations (left or right of aircraft) with regard to radial passage?
3. What is the indication of the course indicator (TO, FROM, or OFF) when using a LOCALIZER front course? LOC BC?
4. What is the procedure for engine failure while in IMC?
5. What would your actions be during an IMC flight at night, with an inoperative alternator?
6. If you encounter airframe icing that cannot be controlled by the use of anti-icing and de-icing equipment, what should you do?
7. What is the importance of airspeed during a circle-to-land procedure?
8. What criteria would you use during an instrument Cross-Country flight for planning your descent?
9. What action would you take during an ILS approach if you noticed the GS flag on your CDI indicator?
10. Why should you disregard all glide slope indications during a back course approach?
11. What is the approximate number of degrees from the center of the LOCALIZER course during a full-scale deflection of the LOC needle?
12. (Special extra-credit question) What are the differences between an LDA and a SDF course?