

INSTRUMENT FLIGHT INSTRUCTOR Plan of Action

Fee for this Exam is \$180 Fees are collected in advance of any test.

There are 3 outcomes to this test. 1. Temporary Airman Certificate issued (probably what you want!) 2. Discontinuance of the test (weather or maintenance problems) 3. Notice of Disapproval (more dual needed!). If a retest is needed, I charge \$50/hr.

Make sure you have all sign-offs in your logbook, a record of the GROUND TRAINING received (unless 141), the written test is signed off (unless you got 100%), you have all documents, including picture ID issued by a US or state government agency.

This plan of action is required by the FAA when I give you a flight test to ensure my testing is consistent from one applicant to another.

If you don't understand a question; please tell me so I can try asking it a different way. If you don't know, just tell me you don't know.

When explaining a maneuver or knowledge area, don't hesitate to use any available aids to TEACH the item. This IS open book!

When we are in the aircraft, I will help you look for traffic. If you are unsure of what I asked, ask me again. If you aren't ready to do something, tell me. I am also looking for good judgment, like NOT continuing a bad approach, etc.

Example questions:

ATTITUDE INSTRUMENT FLYING

1. A consistent loss of altitude during steep turn entries indicates a lack of understanding of what basic requirement?
2. What two conditions must be met before a pilot may descend below the MDA or DH during an instrument approach?
3. During a constant descent maneuver, such as an ILS approach, what control is used to correct glide path deviations?(small deviations with pitch, large may also require power adjustments also)
4. What is indicated if the attitude indicator shows that the aircraft attitude is sharply nose up, but the airspeed is steady and the altimeter is steady? (attitude indicator has failed. constant airspeed and altitude indicate level flight.)
5. What is the initial objective during recovery from a nose high critical attitude? (avoiding the onset of a stall by adding power and reducing pitch.)
6. Why is it critical that power be reduced to idle immediately during a recovery from a nose down unusual attitude recovery?
7. If the attitude indicator is inoperative, what instruments are used for pitch information? (altimeter, airspeed)
8. What is the procedure for determining the approximate angle of bank required for a standard rate turn? (10° for each 100 k of true airspeed)
9. Outline the proper procedure for leveling off from a climb made by instrument references.(using a 10% lead the nose is leveled and the trim is adjusted for level flight. After the airspeed is obtained, power is adjusted to desired cruise.)
10. During a timed turn to the right, the turn indicator shows the correct rate of turn but the ball is to the left of center. What is the correct procedure to correct this? (reduce right rudder input and slight increase in aileron to the right to maintain standard rate)
11. How does proper trim technique result in more precise, smoother airplane control during attitude instrument flying? (the pilot is able to spend more time scanning the instruments and less time fighting the altitude deviations.)
12. Explain how changes in power, pitch or configuration may require a trim adjustment.
13. What is the likely cause if the student "chases" the instrument indications and lacks precise airplane control? (the student will be unable to learn due to preoccupation with airplane control)
14. During an ILS approach, what controls are used to maintain the glide slope and airspeed?

INSTRUMENT CHARTS and PROCEDURES

1. What does MAA represent? Why is it used on some airways?
2. How is an airport with a published IAP depicted on a low altitude chart?
3. Discuss the parameters of the positive control area and the equipment requirements for flight in this airspace.
4. What are SIDs and STARs?
5. Compare DH and MDA.
6. What is the meaning of the notation NoPT on approach charts?
7. Discuss the IAF and FAF.
8. Why should a procedure turn be executed on the maneuvering side of the approach course as depicted on the approach chart?
9. Explain the use of RVR and visibility designations for landing minimums.
10. How are remote control navigational facilities designated on enroute charts?
11. Explain the significance of MOCA and MEA.
12. Assume a pilot is cruising at an MEA of 7,000ft. and is required to report arrival at a specific intersection. What would be the significance of a small MRA symbol and the designation "8500" near that intersection?
13. Explain the significance of MCA on an enroute chart.
14. What is the standard width of an airway? Are there any exceptions to this rule?
15. Assume a flight at 8,000 feet is issued a clearance to cross the BOJAK intersection at 3,500 feet in six minutes. What average rate of descent will be needed to comply with that clearance?(750fpm)
16. When navigating to an intersection identified by an airway and a VOR radial, why should the OBS be set to the published VOR radial, rather than the inbound bearing?(to have the correct flag indication)
17. What is the significance of the term "cruise" preceding an altitude assignment from ATC?
18. How can a pilot distinguish the difference between a Terminal VOR and an Enroute VOR?
19. If a flight is cleared to a fix short of the destination airport and is not given an EFC time when may further clearance be expected?

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20. What action is required if further clearance is not received? (when the planned and filed time has expired, you are cleared to the destination)
21. Compare the sensitivity of the CDI when used for localizer function vs. VOR navigation. (CDI is four times more sensitive)
22. Under what circumstance is reverse sensing of the CDI unavoidable?(LOC-BC, outbound on localizer for procedure turn, without a back course switch or an HSI)
23. When operating at the MOCA, navigation is insured for what distance?(22 nm.)

INSTRUMENT APPROACH PROCEDURES

1. What weather minimums must be present at an airport before it can qualify as an alternate in a flight plan?
2. Under what circumstances may an airport without a IAP be listed as an alternate?
3. How do pilots signify that they do not want to be issued a STAR?
4. In terms of a DME arc transition, what is the purpose of a lead-in radial? (it is permissible to begin the inbound course once the LR is crossed)
5. How does the pilot determine the MAPInt during a non-precision approach? How is it determined during a precision approach?
6. What significant advantages do ASR and PAR approaches have over other types of instrument approaches?
7. What requirements must be met before a contact approach clearance can be issued?
8. What are the requirements for a visual approach?
9. Under what conditions are circling approach minimums used?
10. What are the three holding pattern procedures? What determines which is used for a specific entry?
11. Why must the holding clearance include an EFC time?
12. What are the basic ground components of an ILS installation?
13. Describe the difference between a RAIL and a REIL system.
14. What is the difference between a LOC and a LDA approach?
15. What components may be used as a substitute for the outer marker(OM) of an ILS.
16. What is the definition of "runway environment"?

IFR EMERGENCY PROCEDURES

1. What facilities can be used by ATC to give instruction when communication radios are inoperative? (voice enabled VOR, Cell phone, Flight Phone)
2. When communications are lost in IFR and VFR conditions are encountered at a later time, what procedures should be followed?
3. If radio contact with the controlling agency is lost while IFR, how can contact be re-established?
4. Which instruments may be used to replace the functions of an inoperative heading indicator? (T-C, Compass, RMI)
5. What instruments will provide pitch information in the event of an attitude indicator failure? (Altimeter, Airspeed)

6. When is the correct time to begin the approach if the radio communications are lost while holding at the final approach fix? (only once the EFC time has been reached)
7. Can a pilot execute an ILS with an inoperative marker beacon receiver? (as long as a substitute is available; GPS, NDB, Radar, intersection, DME)
8. Assume the student is making a practice ILS approach in a radar environment. How can the instructor simulate a navigation radio failure and teach the student to transition to a radar approach?
9. If an enroute radio communications failure occurs, which route should be flown? (the one contained in the last clearance or the one told to expect)
10. When making an ILS approach, the runway lights are in view at the DH. However, as the pilot continues the approach, the lights are obscured and then disappear. What is the correct procedure? (missed approach as published or as assigned)
11. What is the significance of the MSA shown of IAP plates?
12. What types of weather encountered by the pilot while IFR must be reported by the pilot to ATC?
13. What instrument(s) become unusable if ice forms in the pitot tube? (airspeed, air data computer if equipped)
14. Under a lost comm scenario, what is the correct beacon code for the transponder?
15. How could a pilot acknowledge an ATC communication with the transmitter only inoperative?
16. If a pilot holding over an LOM experiences an ADF failure, how can the holding pattern be continued? (localizer, marker beacon still work)

Radio Interference, phenomena and other electrical problems

1. What is a "false" localizer or "false" glideslope?
2. If an ADF seems to have poor reception of a NDB, but seems to work as the aircraft gets within a mile or two of the beacon, what component in the aircraft might be causing the poor reception? (alternator, temporarily turn it off if needed to make the approach)
3. What two conditions that exist at the same time can cause a localizer and glideslope to oscillate during ILS operation and what can the pilot do to avoid it?
4. What are the three main items to check while troubleshooting a radio failure in flight? (correct radio frequency, microphone or headset connections, push to talk works)
5. The alternator circuit breaker has "tripped" and, after waiting for it to cool, the pilot resets it. If the breaker immediately "trips" again what action should be taken? (reduce the electrical load to the minimum needed, start planning to terminate the flight early if possible)
6. What actions need to be taken in the event of a charging system failure?

The following is from the FAA CFII PTS

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A. TASK: AIRCRAFT FLIGHT INSTRUMENTS AND NAVIGATION EQUIPMENT

1. Flight instrument systems and their operating characteristics to include—
 - a. pitot- static system.
 - b. attitude indicator.
 - c. heading indicator/horizontal situation indicator/remote magnetic indicator.
 - d. magnetic compass.
 - e. turn-and-slip indicator/turn coordinator.
2. Navigation equipment and their operating characteristics to include—
 - a. VHF omnirange (VOR).
 - b. distance measuring equipment (DME).
 - c. instrument landing system (ILS)
 - d. marker beacon receiver/indicators.
 - e. automatic direction finder (ADF).
 - f. global positioning system (GPS).
3. Anti-ice/deicing and weather detection equipment and their operating characteristics to include—
 - a. airframe.
 - b. propeller or rotor.
 - c. air intake.
 - d. fuel system.
 - e. pitot-static system.
 - f. radar/lightning detection system.

C. TASK: REGULATIONS AND PUBLICATIONS RELATED TO IFR OPERATIONS

1. 14 CFR parts 61, 91, 95, and 97.
2. FAA-H-8083-15, Instrument Flying Handbook.
3. Aeronautical Information Manual.
4. Practical Test Standards.
5. Airport Facility Directory.
6. Standard Departures/Terminal Arrivals.
7. En route Charts.
8. Standard Instrument Approach Procedure Charts.

B. TASK: CROSS-COUNTRY FLIGHT PLANNING

1. Regulatory requirements for instrument flight within various types of airspace.
2. Computation of estimated time en route and total fuel requirement for an IFR cross-country flight.
3. Selection and correct interpretation of the current and applicable en route charts, DP's, STAR's, and standard instrument approach procedure charts.
4. Procurement and interpretation of the applicable NOTAM information.
5. Preparation and filing of an actual or simulated IFR flight plan.

X. AREA OF OPERATION: POSTFLIGHT PROCEDURES

TASK: CHECKING INSTRUMENTS AND EQUIPMENT

describing:

1. Importance of noting instruments and navigation equipment for improper operation.
2. Reasons for making a written record of improper operation and/or calibration of instruments prior to next IFR flight.

Brief for the Flight portion of the test

Applicant is PIC, Looking for traffic, radio communications, simulation of emergencies and equipment failures, Transfer of controls is done by verbalizing "I have the controls", "you have the controls".

Applicant shall be expected to perform TASK H in AREA OF OPERATION VI, Recovery from Unusual Attitudes and TASK A in AREA OF OPERATION VIII, Non-precision Instrument Approach using a view-limiting device.

And:

At least one non-precision approach procedure shall be accomplished without the use of the gyroscopic heading and attitude indicators under simulated instrument conditions.

C. TASK: INSTRUMENT COCKPIT CHECK

1. Communications equipment.
2. Navigation equipment.
3. Magnetic compass.
4. Heading indicator/horizontal situation indicator/remote magnetic indicator.
5. Attitude indicator.
6. Altimeter.
7. Turn-and-slip indicator/turn coordinator.
8. Vertical-speed indicator.
9. Airspeed indicator.
10. Outside air temperature.
11. Clock.

B. TASK: COMPLIANCE WITH DEPARTURE, EN ROUTE, AND ARRIVAL PROCEDURES AND CLEARANCES

1. Selection and use of current and appropriate navigation publications.
2. Pilot and controller responsibilities with regard to SID's, En Route Low and High Altitude Charts, and STAR's.
3. Selection and use of appropriate communications frequencies.
4. Selection and identification of the navigation aids.
5. Accomplishment of the appropriate checklist items.
6. Pilot's responsibility for compliance with vectors and also altitude, airspeed, climb, descent, and airspace restrictions.
7. Pilot's responsibility for the interception of courses, radials, and bearings appropriate to the procedure, route, or clearance.
8. Procedures to be used in the event of two-way communications failure.

VI. AREA OF OPERATION: FLIGHT BY REFERENCE TO INSTRUMENTS

The applicant shall select either the primary and supporting or control and performance method for teaching this AREA OF OPERATION.

H. TASK: RECOVERY FROM UNUSUAL FLIGHT ATTITUDES

- a. conditions or situations which contribute to the development of unusual flight attitudes.
 - b. procedure using full panel and **partial panel** for recovery from nose-high and nose-low unusual flight attitudes.
2. Exhibits instructional knowledge of common errors related to recovery from unusual flight attitudes by describing—
 - a. incorrect interpretation of the flight instruments.
 - b. inappropriate application of controls
 3. Demonstrates and simultaneously explains recovery from unusual flight attitudes, solely by reference to instruments, from an instructional standpoint.
 4. Analyzes and corrects simulated common errors related to recovery from unusual flight attitudes.

B. TASK: LOSS OF GYRO ATTITUDE AND HEADING INDICATORS

describing—

- a. recognition of inaccurate or inoperative gyro instruments.
 - b. notification of ATC of gyro loss and whether able to continue with flight clearance.
 - c. importance of timely transition from full to partial panel condition.
2. Exhibits instructional knowledge of common errors related to loss of gyro attitude and heading indicators by describing—
 - a. slow to recognize inaccurate or inoperative gyro instruments.
 - b. failure to notify ATC of situation.
 - c. failure to adequately transition from full to partial panel condition.

F. TASK: TIMED TURNS TO MAGNETIC COMPASS HEADINGS

1. describing—
 - a. operating characteristics and errors of the magnetic compass.

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- b. calibration of the miniature aircraft of the turn coordinator, both right and left, **using full panel and the clock.**
- c. procedures using full panel and partial panel performing compass turns to a specified heading.

2. describing—

- a. incorrect calibration procedures.
- b. improper timing.
- c. uncoordinated use of controls.
- d. improper trim control.

3. Demonstrates and simultaneously explains timed turns to magnetic compass headings from an instructional standpoint.

- 4. Analyzes and corrects simulated common errors related to timed turns to magnetic compass headings.

VII. AREA OF OPERATION: NAVIGATION SYSTEMS

A. TASK: INTERCEPTING AND TRACKING

NAVIGATIONAL SYSTEMS AND DME ARCS

1. describing—

- a. tuning and identification of a navigational facility.
- b. setting of a selected course on the navigation selector or the correct identification of a selected bearing on the RMI.
- c. method for determining aircraft position relative to a facility.
- d. procedure for intercepting and maintaining a selected course.
- e. procedure for intercepting and maintaining a DME arc.
- f. procedure for intercepting a course or localizer from a DME arc.
- g. recognition of navigation facility or waypoint passage.
- h. recognition of navigation receiver or facility failure.

2. describing—

- a. incorrect tuning and identification procedures.
- b. failure to properly set the navigation selector on the course to be intercepted.
- c. failure to use proper procedures for course or DME arc interception and tracking.
- d. improper procedures for intercepting a course or localizer from a DME arc.

3. Demonstrates and simultaneously explains intercepting and tracking navigational systems and DME arcs from an instructional standpoint.

- 4. Analyzes and corrects simulated common errors related to intercepting and tracking navigational systems and DME arcs.

B. TASK: HOLDING PROCEDURES

1. describing—

- a. setting of aircraft navigation equipment.
- b. requirement for establishing the appropriate holding airspeed for the aircraft and altitude.
- c. recognition of arrival at the holding fix and the prompt initiation of entry into the holding pattern.
- d. timing procedure.
- e. correction for wind drift.
- f. use of DME in a holding pattern.
- g. compliance with ATC reporting requirements.

2. Exhibits instructional knowledge of common errors related to holding procedures by describing—

- a. incorrect setting of aircraft navigation equipment.
- b. inappropriate altitude, airspeed, and bank control.
- c. improper timing.
- d. improper wind drift correction.
- e. failure to recognize holding fix passage.
- f. failure to comply with ATC instructions.

3. Demonstrates and simultaneously explains holding procedures from an instructional standpoint.

- 4. Analyzes and corrects simulated common errors related to holding procedures.

VIII. AREA OF OPERATION: INSTRUMENT APPROACH PROCEDURES

NOTE: The examiner shall select TASKS A and B, to be combined with TASK C, D, or E. At least one non-precision approach procedure shall be accomplished without the use of the gyroscopic heading and attitude indicators under simulated instrument conditions.

A. TASK: NON-PRECISION INSTRUMENT APPROACH

1. describing—

- a. selection of the appropriate instrument approach procedure chart.
- b. pertinent information on the selected instrument approach chart.
- c. radio communications with ATC and compliance with ATC clearances, instructions and procedures.
- d. appropriate aircraft configuration, airspeed, and checklist items.
- e. selection, tuning, identification, and determination of operational status of ground and aircraft navigation equipment.
- f. adjustments applied to the published MDA and visibility criteria for the aircraft approach category.
- g. maintenance of altitude, airspeed, and track, where applicable.
- h. establishment and maintenance of an appropriate rate of descent during the final approach segment.
- i. factors that should be considered in determining whether:
 - (1) the approach should be continued straight-in to a landing;
 - (2) a circling approach to a landing should be made; or
 - (3) a missed approach should be performed.

2. describing—

- a. failure to have essential knowledge of the information on the instrument approach chart.
 - b. incorrect communications procedures or noncompliance with ATC clearances or instructions.
 - c. failure to accomplish checklist items.
 - d. faulty basic instrument flying technique.
 - e. inappropriate descent below the MDA.
- ### 3. Demonstrates and simultaneously explains a non-precision instrument approach from an instructional standpoint.
- 4. Analyzes and corrects simulated common errors related to a non-precision instrument approach.

B. TASK: PRECISION INSTRUMENT APPROACH

1. describing—

- a. selection of the appropriate instrument approach chart.
- b. pertinent information on the selected instrument approach chart.
- c. selection, tuning, identification, and determination of operational status of ground and aircraft navigation equipment.
- d. radio communications with ATC and compliance with ATC clearances, instructions and procedures.
- e. appropriate aircraft configuration, airspeed, and checklist items.
- f. adjustments applied to the published DH/DA and visibility criteria for the aircraft approach category.
- g. maintenance of altitude, airspeed, and track, where applicable.
- h. establishment and maintenance of an appropriate rate of descent during the final approach segment.
- i. factors that should be considered in determining whether:
 - (1) the approach should be continued straight-in to a landing;
 - (2) a circling approach to a landing should be made; or
 - (3) a missed approach should be performed.

2. describing—

- a. failure to have essential knowledge of the information on the instrument approach procedure chart.
 - b. incorrect communications procedures or noncompliance with ATC clearances.
 - c. failure to accomplish checklist items.
 - d. faulty basic instrument flying technique.
 - e. inappropriate application of DH/DA.
- ### 3. Demonstrates and simultaneously explains a precision instrument approach from an instructional standpoint.

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Notes:

4. Analyzes and corrects simulated common errors related to a precision instrument approach.

C. TASK: MISSED APPROACH

describing—

- a. pertinent information on the selected instrument approach chart.
- b. conditions requiring a missed approach.
- c. initiation of the missed approach, including the prompt application of power, establishment of a climb attitude, and reduction of drag.
- d. required report to ATC.
- e. compliance with the published or alternate missed approach procedure.
- f. notification of ATC if the aircraft is unable to comply with a clearance, instruction, restriction, or climb gradient.
- g. performance of recommended checklist items appropriate to the go-around procedure.
- h. importance of positive aircraft control.

2. describing—

- a. failure to have essential knowledge of the information on the instrument approach chart.
 - b. failure to recognize conditions requiring a missed approach.
 - c. failure to promptly initiate a missed approach.
 - d. failure to make the required report to ATC.
 - e. failure to comply with the missed approach procedure.
 - f. faulty basic instrument flying technique.
 - g. descent below the MDA prior to initiating a missed approach.
3. Demonstrates and simultaneously explains a missed approach from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a missed approach.

E. TASK: LANDING FROM A STRAIGHT-IN APPROACH

describing—

- a. effect of specific environmental, operational, and meteorological factors.
 - b. transition to, and maintenance of, a visual flight condition.
 - c. adherence to ATC advisories, such as NOTAM's, wind shear, wake turbulence, runway surface, and braking conditions.
 - d. completion of appropriate checklist items.
 - e. maintenance of positive aircraft control.
2. describing—
- a. inappropriate division of attention during the transition from instrument to visual flight conditions.
 - b. failure to complete required checklist items.
 - c. failure to properly plan and perform the turn to final approach.
 - d. improper technique for wind shear, wake turbulence, and crosswind.
 - e. failure to maintain positive aircraft control throughout the complete landing maneuver.
3. Demonstrates and simultaneously explains a landing from a straight-in approach from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to landing from a straight-in approach.

Debrief and Files