

# **INSTRUMENT RATING GROUND TRAINING COURSE SYLLABUS**

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## **TRAINING COURSE OUTLINE INSTRUMENT RATING - GROUND**

### **COURSE OBJECTIVES**

The student will obtain the knowledge skill and experience necessary to pass the Instrument Airplane FAA written test.

### **COURSE COMPLETION STANDARDS**

The student must demonstrate through tests and school records that the aeronautical knowledge requirements necessary to obtain an endorsement for the Instrument Airplane FAA written test.

## **TRAINING COURSE SYLLABUS INSTRUMENT RATING - GROUND**

### **COURSE INTRODUCTION**

ATD Flight Systems Training Course Syllabus for the Instrument Rating – Ground is the syllabus portion of the ATD Flight Systems 14 CFR Part 141\* Approved Instrument Rating Ground Training Course. This syllabus provides a logical, structured sequence that maximizes learning and meets 14 CFR Part 141 training time requirements. Training times must be increased slightly to meet 14 CFR Part 61\* requirements for students training under those rules. This Training Course Syllabus contains ground lessons appropriate to the Instrument Rating.

### **COURSE CONCEPT**

The Instrument Ground course utilizes the building-block theory of learning, which recognizes that each item taught must be presented on the basis of previously learned knowledge and skills.

For optimum effectiveness, the viewing of the associated video segments should be completed prior to the respective ground lessons.

### **COURSE ELEMENTS**

The course includes the latest FAA pilot certification requirements and a maximum of student-oriented instruction. The syllabus and support materials not only provide necessary information, but also guide the student through the course in a logical manner.

### **STUDENT VIDEO PREPARATION**

The ATD Flight Systems Instrument Rating Training Course Syllabus is based on Sporty's Complete Flight Training course for the Instrument Rating on DVD. It is important that the student view all seven DVDs in the Instrument course. For each ground lesson, there is required review of specific video sections, and this should be accomplished as part of a self-study program before the ground lesson. Additional topics may also be assigned by the instructor. To maximize the learning benefit of the DVDs, the student should also review the video sections after completion of the lesson. This is particularly true of any subject areas where the student encountered difficulty.

### **STUDENT INFORMATION**

#### *COURSE ENROLLMENT*

To be enrolled in this course, you must have a Private Pilot Certificate.

### **LESSON TIMES**

Lesson times are specified as a guide to meeting the 14 CFR Part 141 training requirements for the Instrument Rating. Under the building block concept, however, the student must

achieve a specific level of proficiency before starting the next lesson. Lessons may be combined or repeated as needed based on the progress made by the student. The Course Time Allocation Table is provided for planning purposes. It is imperative that the instructor and student periodically review the student's overall progress and determine that the training requirements are consistently being met.

## STUDENT STAGE CHECKS

Stage checks measure the student's accomplishments during each stage of training. This procedure provides close supervision of training and another opinion on the student's progress. An examination of the building-block theory of learning will show that it is extremely important for progress and proficiency to be satisfactory before the student enters a new stage of training. Therefore, the next stage should not begin until the student successfully completes the current stage. Failure to follow this progression may defeat the purpose of the stage check and lead to overall course breakdown.

## GRADING

Evaluation is an essential part of the teaching process. The student must be apprised of his or her progress. All instructional lessons must be graded in accordance with the following criteria.

Each ground task will be evaluated at the completion of each instructional lesson.

1 = EXCELLENT	The student demonstrates knowledge or skills with no procedural or mechanical errors and the flight instructor does not provide any assistance
2 = ABOVE AVERAGE	The student demonstrates knowledge or skills that exceed standards. Occasional procedural or mechanical errors are quickly recognized and corrected.
3 = AVERAGE	The student consistently demonstrates knowledge and skills that meet standards with timely recognition of procedural or mechanical errors.
4 = BELOW AVERAGE	The student demonstrates knowledge and skills with difficulty, is slow in recognizing and correcting procedural or mechanical errors.
5 = BELOW ACCEPTABLE STANDARDS	The student does not demonstrate adequate knowledge or skills, is unable to recognize and correct procedural or mechanical errors.
I = INCOMPLETE	The student has not completed the pilot operation listed

Each ground lesson will be assigned an overall grade based on the following criteria.

- |                         |   |
|-------------------------|---|
| S = SATIS-<br>FACTORY   | The content of the lesson has been completed to the standards outlined in the individual lesson Completion Standards.   |
| U = UNSATIS-<br>FACTORY | Indicates that all or part of the lesson content was not completed to the standards outlined in the individual lesson Completion Standards. One or more pilot operations graded as a “5” will require an overall grade of unsatisfactory. |
| I = INCOMPLETE          | Indicates the content of the lesson was not completed, but the pilot operations covered were satisfactory. Pilot operations not completed must be indicated with an “I”.  |

**Course Time Allocation Table**

STAGE NO.	LESSON	TRAINING TIMES			
		FLT	INSTRUMENT TIME (ACTUAL OR SIMULATED)	FTD	DISCUSSION
I	1				1.2
I	2				1.2
I	3				1.2
I	4				1.2
I	5				1.2
I	6				1.2
I	7				1.2
STG I TEST					1.0
STG I TOTALS					9.4
II	8				2.0
II	9				1.5
II	10				1.5
II	11				1.2
II	12				1.2
II	13				1.2
II	14				1.2
II	15				1.2
II	16				1.2
II	17				1.2
STG II TEST					1.0
STG II TOTALS					14.4
III	18				1.2
III	19				1.2
III	20				1.2
STG III TEST					1.0
STG III TOTALS					4.6
END OF COURSE TEST					2.0
COURSE TOTALS					30.4
FAA 141 REQUIREMENTS					30.0 Hours

## **STAGE I**

### **STAGE OBJECTIVE:**

During this stage, the student will learn the basics of the aircrafts instruments and navigation systems for use in Instrument flight.

### **STAGE COMPLETION STANDARDS:**

At the completion of this stage the student will pass a written test on the subject areas covered in this Stage with a minimum score of 80%.



**STAGE I  
LESSON 1  
DUAL - GROUND  
FLIGHT  
INSTRUMENTS**

**LESSON OBJECTIVE:**

During this lesson, the instructor will review the pitot-static and gyroscopic instruments with the student.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Altimeter
- \_\_\_\_\_ Types of Altitude
- \_\_\_\_\_ Vertical Speed Indicator
- \_\_\_\_\_ Airspeed Indicator
- \_\_\_\_\_ Types of Airspeed
- \_\_\_\_\_ Pitot-Static Instrument Errors

**Lesson Introduction**

- \_\_\_\_\_ Attitude Indicator
- \_\_\_\_\_ Gyro Driven Heading Indicator
- \_\_\_\_\_ Turn Coordinator / Turn & Bank Indicator
- \_\_\_\_\_ Slip & Skid Indicator
- \_\_\_\_\_ Gyroscopic Instrument Errors
- \_\_\_\_\_ Glass Panel Flight Instrument Displays

Lesson Grade/Date \_\_\_\_\_  
 Lesson time \_\_\_\_\_  
 CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have a thorough knowledge of the pitot-static and gyroscopic instruments.

**REQUIRED STUDY:**

FAA-H-8083-15-IFH - Instrument Flying Handbook  
 Instrument Rating Practical Test Standards (Refer to Section 1 of the PTS Study Guide, which accompanies Sporty's *Complete Flight Training Course* for the Instrument Rating on DVD.)  
 Sporty's *Complete Flight Training Course* for the Instrument Rating - DVD Vol 1: Segments 1-14

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE I  
LESSON 2  
DUAL - GROUND  
BAI**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to concepts related to the control of the aircraft using the aircraft instruments.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Instrument Scan
- \_\_\_\_\_ Instrument Interpretation
- \_\_\_\_\_ Aircraft Control
- \_\_\_\_\_ Performance Instruments
- \_\_\_\_\_ Control Instruments

**Lesson Introduction**

- \_\_\_\_\_ Primary Instruments
- \_\_\_\_\_ Supporting Instruments
- \_\_\_\_\_ Direct Indicating Instruments
- \_\_\_\_\_ Indirect Indicating Instruments
- \_\_\_\_\_ Instrument Takeoff

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have an understanding of controlling the aircraft by reference to the aircraft instruments.

**REQUIRED STUDY:**

FAA-H-8083-15-IFH  
Instrument Rating Practical Test Standards  
Vol 1: Segments 1-14

**Notes:**

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**STAGE I  
LESSON 3  
DUAL - GROUND  
MAGNETIC COMPASS**

**LESSON OBJECTIVE:**

During this lesson, the instructor will review the magnetic compass with the student

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Magnetic Compass Construction
- \_\_\_\_\_ Principles of Magnetic Attraction
- \_\_\_\_\_ Magnetic Dip
- \_\_\_\_\_ Magnetic Variation
- \_\_\_\_\_ Magnetic Deviation
- \_\_\_\_\_ Northerly Turning Error
- \_\_\_\_\_ Acceleration Error
- \_\_\_\_\_ Oscillation Error

**Lesson Introduction**

- \_\_\_\_\_ Turns to Magnetic Compass Headings
- \_\_\_\_\_ Calibrating Turn Coordinator
- \_\_\_\_\_ Timed Turns
- \_\_\_\_\_ Partial Panel Instrument Flight
- \_\_\_\_\_ Unusual Attitude Recoveries - Full Panel
- \_\_\_\_\_ Unusual Attitude Recoveries - Partial Panel
- \_\_\_\_\_ Aeromedical Factors for IFR Flight

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have a thorough knowledge of the magnetic compass.

**REQUIRED STUDY:**

FAA-H-8083-15-IFH  
Instrument Rating Practical Test Standards  
Vol 1: Segments 9-14

**Notes:**

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**STAGE I  
LESSON 4  
DUAL - GROUND  
NDB FUNDAMENTALS**

**LESSON OBJECTIVE:**

During this lesson, the instructor will discuss NDB fundamentals with the student.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ NDB Principles of Operation
- \_\_\_\_\_ NDB Transmitter
- \_\_\_\_\_ ADF
- \_\_\_\_\_ Types of NDBs & Service Volumes
- \_\_\_\_\_ NDB Errors & Irregularities
- \_\_\_\_\_ NDB Tuning, Identifying, and Monitoring

**Lesson Introduction**

- \_\_\_\_\_ NDB Orientation, Position and Station Passage
- \_\_\_\_\_ Intercepting NDB Bearings
- \_\_\_\_\_ Tracking NDB Bearings / Wind Correction Techniques

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have a thorough knowledge of the NDB and its operating principles. The student will also be able to accurately describe the proper techniques for orientation, intercepting, and tracking an NDB bearing.

**REQUIRED STUDY:**

FAA-H-8083-15-IFH  
AIM - Aeronautical Information Manual  
Instrument Rating Practical Test  
Standards Vol 3: Segments 11-12

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE I  
LESSON 5  
DUAL - GROUND  
VOR FUNDAMENTALS**

**LESSON OBJECTIVE:**

During this lesson, the instructor will discuss VOR fundamentals with the student.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ VOR Principles of Operation
- \_\_\_\_\_ VOR Transmitter
- \_\_\_\_\_ VOR Receiving Equipment
- \_\_\_\_\_ VOR Receiver Accuracy Check
- \_\_\_\_\_ VOR Class Designations & Service Volumes
- \_\_\_\_\_ VOR Errors & Irregularities

**Lesson Introduction**

- \_\_\_\_\_ VOR Tuning and Identifying
- \_\_\_\_\_ VOR Orientation
- \_\_\_\_\_ VOR Intercepting
- \_\_\_\_\_ VOR Tracking / Wind Correction Techniques
- \_\_\_\_\_ VOR Station Passage

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have a thorough knowledge of the VOR and its operating principles. The student will also be able to accurately describe the proper techniques for orientation, intercepting, and tracking a VOR radial and also performing a VOR receiver check.

**REQUIRED STUDY:**

FAA-H-8083-15-IFH  
AIM  
Instrument Rating Practical Test Standards  
Vol 3: Segment 9

**Notes:**

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**STAGE I  
LESSON 6  
DUAL - GROUND  
GPS / AUTOPILOT  
PRINCIPLES**

**LESSON OBJECTIVE:**

During this lesson, the instructor will discuss the principles of GPS and autopilot operation.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ GPS Principles of Operation
- \_\_\_\_\_ Receiver Autonomous Integrity Monitoring (RAIM)
- \_\_\_\_\_ GPS Errors & Irregularities
- \_\_\_\_\_ Wide Area Augmentation System (WAAS)
- \_\_\_\_\_ GPS Modes of Operation
- \_\_\_\_\_ GPS Use Under IFR
- \_\_\_\_\_ GPS CDI Scaling (En Route, Terminal, & Approach)
- \_\_\_\_\_ GPS Waypoints
- \_\_\_\_\_ GPS Direct-To Operations
- \_\_\_\_\_ GPS Flight Plan Operations
- \_\_\_\_\_ GPS Nearest Functions

**Lesson Introduction**

- \_\_\_\_\_ Substitution of GPS for Other Navigation Radios Under IFR
- \_\_\_\_\_ Orientation, Position, and Waypoint Passage / Sequencing
- \_\_\_\_\_ GPS Course Intercepting and Tracking Procedures / Wind Correction Techniques
- \_\_\_\_\_ Computer Based GPS Procedures Simulator (from Appropriate GPS Manufacturer)
- \_\_\_\_\_ Autopilot Principles of Operation
- \_\_\_\_\_ Autopilot Errors & Irregularities
- \_\_\_\_\_ Autopilot Disconnect Options

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have knowledge of GPS and autopilot operation.

**REQUIRED STUDY:**

- FAA-H-8083-15-IFH
- AIM
- Appropriate Manuals for the Installed GPS & Autopilot
- Instrument Rating Practical Test Standards
- Vol 6: Segments 5 & 13

**Notes:**

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**STAGE I  
LESSON 7  
DUAL -  
GROUND  
FAR/AIM**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to the Federal Aviation Regulations (FARs) contained in 14 CFR and the sections of the Aeronautical Information Manual (AIM) that pertain to instrument flight.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ 14 CFR Regulations - Applicable to IFR Flight
- \_\_\_\_\_ Part 1
- \_\_\_\_\_ Part 43
- \_\_\_\_\_ Part 61
- \_\_\_\_\_ Part 91
- \_\_\_\_\_ Part 97
- \_\_\_\_\_ NTSB 830

**Lesson Introduction**

- \_\_\_\_\_ AIM - Chapters Applicable to IFR Flight
- \_\_\_\_\_ Chapter 1
- \_\_\_\_\_ Chapter 2
- \_\_\_\_\_ Chapter 3
- \_\_\_\_\_ Chapter 4
- \_\_\_\_\_ Chapter 5
- \_\_\_\_\_ Chapter 6
- \_\_\_\_\_ Chapter 7

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have a basic knowledge of the regulations and the sections of the AIM applicable to instrument flight.

**REQUIRED STUDY:**

- FAA-H-8083-15-IFH
- FAR - 14 CFR Aviation Regulations AIM
- Instrument Rating Practical Test Standards Vol 1: Segments 1-2
- Vol 7: Segments 1-14

**Notes:**

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**STAGE I  
STAGE I TEST**

**LESSON OBJECTIVE:**

This stage test will determine that the student has accomplished the objectives of Stage I.

**CONTENT:**

**Lesson Review**

**Lesson Review**

**TEST**

- \_\_\_\_\_ Flight Instruments
- \_\_\_\_\_ Basic Aircraft Indications
- \_\_\_\_\_ Magnetic Compass
- \_\_\_\_\_ NDB Fundamentals

- \_\_\_\_\_ VOR Fundamentals
- \_\_\_\_\_ GPS Fundamentals
- \_\_\_\_\_ Autopilot Principles
- \_\_\_\_\_ FAR/AIM

TEST Grade/Date \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have passed a written test on the objectives in Stage I with a minimum score of 80%

**REQUIRED STUDY:**

- FAA-H-8083-15-IFH
- Instrument Rating Practical Test Standards
- Vol 1: Review Segments as Needed
- Vol 6: Review Segments as Needed

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/>
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## **STAGE II**

### **STAGE OBJECTIVE:**

During this stage, the student will learn about Holding, Instrument Approach procedures and Weather.

### **STAGE COMPLETION STANDARDS:**

At the completion of this stage the student will pass a written test on the subject areas covered in this Stage with a minimum score of 80%.

**STAGE II  
LESSON 8  
DUAL - GROUND  
HOLDING & IFR  
CLEARANCES**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to holding and the associated procedures along with IFR clearances.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Holding
- \_\_\_\_\_ Purpose of Holding
- \_\_\_\_\_ Holding Airspace
- \_\_\_\_\_ Legs of a Holding Pattern
- \_\_\_\_\_ Standard vs. Nonstandard Holding Patterns
- \_\_\_\_\_ Maximum Holding Speeds
- \_\_\_\_\_ Holding Entry Procedures
- \_\_\_\_\_ Holding Wind Correction Techniques
- \_\_\_\_\_ Holding Clearances
- \_\_\_\_\_ Fix Crossing Check (5T's)

**Lesson Introduction**

- \_\_\_\_\_ Timing
- \_\_\_\_\_ Use of DME while Holding
- \_\_\_\_\_ Intersection Holding
- \_\_\_\_\_ Communication Requirements
- \_\_\_\_\_ Pilot Responsibilities
- \_\_\_\_\_ ATC Responsibilities
- \_\_\_\_\_ Elements of an IFR Clearance
- \_\_\_\_\_ IFR Clearance Compliance, Limits, and Void Times

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have an understanding of holding procedures and IFR clearances.

**REQUIRED STUDY:**

- FAA-H-8261-1-IPH - Instrument Procedures Handbook
- FAA-H-8083-15-IFH
- AIM
- Instrument Rating Practical Test Standards
- Vol 2: Segments 4-9
- Vol 3: Segment 14
- Vol 7: Segment 12

**Notes:**

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**STAGE II  
LESSON 9  
DUAL - GROUND  
TERMINAL  
PROCEDURES**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to Terminal Procedures Publications.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Terminal Procedures Publication
- \_\_\_\_\_ Aircraft Approach Categories
- \_\_\_\_\_ Inoperative Components or Visual Aids Table
- \_\_\_\_\_ IFR Take-Off Minimums
- \_\_\_\_\_ Published Departure Procedures
- \_\_\_\_\_ ATC Communication and Compliance with Departure Instructions
- \_\_\_\_\_ Situational Awareness during Departure
- \_\_\_\_\_ Climb & Descent Tables
- \_\_\_\_\_ IFR Alternate Minimums

**Lesson Introduction**

- \_\_\_\_\_ Radar Instrument Approach Minimums
- \_\_\_\_\_ Pilot Briefing Information Section
- \_\_\_\_\_ Plan View
- \_\_\_\_\_ Profile View
- \_\_\_\_\_ Minimums Section
- \_\_\_\_\_ Airport Sketch & Airport Diagram
- \_\_\_\_\_ Missed Approach Section
- \_\_\_\_\_ Minimum Safe Altitude
- \_\_\_\_\_ Descent Planning
- \_\_\_\_\_ Standard Terminal Arrival Procedures

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have an understanding of terminal procedures.

**REQUIRED STUDY:**

- FAA-H-8261-1-IPH
- FAA-H-8083-15-IFH
- AIM
- Instrument Rating Practical Test Standards
- Vol 3: Segments 1-3

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE II  
LESSON 10  
DUAL - GROUND  
INSTRUMENT  
APPROACHES**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to various types of instrument approaches without a glideslope.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Nonprecision Instrument Approaches
- \_\_\_\_\_ Missed Approach Procedures
- \_\_\_\_\_ Timed Approaches
- \_\_\_\_\_ Radar Approaches
- \_\_\_\_\_ Visual Approaches
- \_\_\_\_\_ Contact Approaches
- \_\_\_\_\_ Charted Visual Flight Procedures
- \_\_\_\_\_ Visual Descent Point

**Lesson Introduction**

- \_\_\_\_\_ Approach Briefing
- \_\_\_\_\_ Circling Approaches
- \_\_\_\_\_ Vectored Approaches
- \_\_\_\_\_ Terminal Arrival Area (TAA) Approaches
- \_\_\_\_\_ Lighting Systems
- \_\_\_\_\_ Visibility Minimums

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have an understanding of nonprecision approaches.

**REQUIRED STUDY:**

FAA-H-8261-1-IPH  
 FAA-H-8083-15-IFH  
 AIM  
 Vol 3: Segments 7-18

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE II  
LESSON 11  
DUAL - GROUND  
ATC SYSTEM**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to the structure of the Air Traffic Control (ATC) system and its applicability to IFR flight.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Clearance Delivery
- \_\_\_\_\_ Ground Control
- \_\_\_\_\_ Tower Control (Local Control)
- \_\_\_\_\_ Terminal Approach Control Facilities
- \_\_\_\_\_ Approach Control
- \_\_\_\_\_ Departure Control
- \_\_\_\_\_ Final Controller

**Lesson Introduction**

- \_\_\_\_\_ Air Route Traffic Control Centers (ARTCC)
- \_\_\_\_\_ Tower En Route Control (TEC)
- \_\_\_\_\_ Federal Airways
- \_\_\_\_\_ Uncontrolled Airspace
- \_\_\_\_\_ IFR Flight Planning and Filing Procedures
- \_\_\_\_\_ Closing an IFR Flight Plan

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have an understanding of the ATC structure and how it is structured to provide safe and efficient flow of IFR traffic.

**REQUIRED STUDY:**

- FAA-H-8261-1-IPH
- FAA-H-8083-15-IFH
- AIM
- Instrument Rating Practical Test
- Standards Vol 2: Segments 1-13
- Vol 7: Segment 12

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE II  
LESSON 12  
DUAL - GROUND  
PILOT / CONTROLLER  
RESPONSIBILITIES**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to the responsibilities of the Pilot and the Air Traffic Controller.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Air Traffic Clearance
- \_\_\_\_\_ Contact Approach
- \_\_\_\_\_ Visual Approach
- \_\_\_\_\_ Instrument Approach
- \_\_\_\_\_ Missed Approach
- \_\_\_\_\_ Radar Vectors
- \_\_\_\_\_ Safety Alerts
- \_\_\_\_\_ Speed Adjustments
- \_\_\_\_\_ Visual Separation
- \_\_\_\_\_ Instrument Departures

**Lesson Introduction**

- \_\_\_\_\_ Wake Turbulence Separations
- \_\_\_\_\_ Compulsory Reporting Points
- \_\_\_\_\_ Loss of Communications
- \_\_\_\_\_ Land and Hold Short Operations
- \_\_\_\_\_ Practice Instrument Approaches
- \_\_\_\_\_ IFR Separation Standards
- \_\_\_\_\_ See and Avoid
- \_\_\_\_\_ Traffic Advisories
- \_\_\_\_\_ VFR-On-Top
- \_\_\_\_\_ Minimum Fuel Advisory

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have an understanding of pilot and controller responsibilities.

**REQUIRED STUDY:**

- FAA-H-8261-1-IPH
- FAA-H-8083-15-IFH
- AIM
- Instrument Rating Practical Test
- Standards Vol 2: Segments 1-13
- Vol 3: Segments 7-8

<b>Notes:</b>

**STAGE II  
LESSON 13  
DUAL - GROUND  
INSTRUMENT  
LANDING SYSTEM**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the instrument landing system and associated approaches to the student. WAAS approaches will also be covered.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Localizer Principles of Operation
- \_\_\_\_\_ Glideslope Principles of Operation
- \_\_\_\_\_ Marker Beacons
- \_\_\_\_\_ ILS Receiving Equipment
- \_\_\_\_\_ ILS Categories
- \_\_\_\_\_ ILS Errors & Irregularities

**Lesson Introduction**

- \_\_\_\_\_ Localizer and Glideslope Critical Areas
- \_\_\_\_\_ Simplified Directional Facility
- \_\_\_\_\_ Localizer-Type Directional Aid
- \_\_\_\_\_ Precision Instrument Approaches
- \_\_\_\_\_ Back Course Approaches
- \_\_\_\_\_ APV Instrument Approaches

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have a thorough knowledge of the ILS, LDA, SDF, and WAAS systems and their operating principles.

**REQUIRED STUDY:**

- FAA-H-8261-1-IPH
- FAA-H-8083-15-IFH
- AIM
- Instrument Rating Practical Test Standards
- Vol 3: Segments 1-5

**Notes:**

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**STAGE II  
LESSON 14  
DUAL - GROUND  
AUTOPILOT  
APPROACHES & DME**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to distance measuring equipment, the use of the autopilot for approaches, and instrument approaches with loss of primary flight instrument indicators (partial panel).

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Autopilot Approach Operations & Limitations
- \_\_\_\_\_ Nonprecision Approaches with an Autopilot
- \_\_\_\_\_ APV Approaches with an Autopilot
- \_\_\_\_\_ Precision Approaches with an Autopilot
- \_\_\_\_\_ Back Course Approaches with an Autopilot
- \_\_\_\_\_ Missed Approach Procedures with an Autopilot
- \_\_\_\_\_ Holding Procedures with an Autopilot

**Lesson Introduction**

- \_\_\_\_\_ DME Principles of Operation
- \_\_\_\_\_ DME Errors & Irregularities
- \_\_\_\_\_ DME Arc Interception
- \_\_\_\_\_ DME Arc Tracking
- \_\_\_\_\_ Use of GPS as Substitute for DME
- \_\_\_\_\_ Instrument Approaches with Loss of Primary Flight Instrument Indicators (Partial Panel)

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have an understanding of distance measuring equipment, the use of the autopilot for approaches, and partial panel approaches.

**REQUIRED STUDY:**

- FAA-H-8261-1-IPH
- FAA-H-8083-15-IFH
- AIM
- Instrument Rating Practical Test
- Standards Vol 3: Segments 16-18
- Vol 6: Segments 3-5

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE II  
LESSON 15  
DUAL - GROUND  
ICING**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to weather conditions associated with icing.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Required Conditions for Ice Formation
- \_\_\_\_\_ Formation of Frost
- \_\_\_\_\_ Formation of Clear Ice
- \_\_\_\_\_ Formation of Rime Ice
- \_\_\_\_\_ Formation of Mixed Ice

**Lesson Introduction**

- \_\_\_\_\_ Icing Intensities
- \_\_\_\_\_ PIREPs Specific to Icing
- \_\_\_\_\_ AIRMETs Specific to Icing
- \_\_\_\_\_ SIGMETs Specific to Icing
- \_\_\_\_\_ Winds / Temps Aloft Forecast

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have an understanding of icing associated with IFR flight.

**REQUIRED STUDY:**

- FAA-H-8083-15-IFH
- AIM
- Instrument Rating Practical Test Standards
- AC 00-6-AvWx - Aviation Weather
- AC 00-45-AvWxSvc - Aviation Weather Services
- Vol 5: Segments 1-5

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE II  
LESSON 16  
DUAL - GROUND  
THUNDERSTORMS**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to thunderstorms and their associated phenomena.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Conditions Required for Thunderstorms
- \_\_\_\_\_ Thunderstorm Lifecycle
- \_\_\_\_\_ Air Mass Thunderstorms
- \_\_\_\_\_ Steady State Thunderstorms
- \_\_\_\_\_ Squall Line Thunderstorms
- \_\_\_\_\_ Embedded Thunderstorms

**Lesson Introduction**

- \_\_\_\_\_ Radar Reports / Radar Summary Chart
- \_\_\_\_\_ Frontal Thunderstorms
- \_\_\_\_\_ Hazards Associated with Thunderstorms
- \_\_\_\_\_ Forecasts Associated with Thunderstorms
- \_\_\_\_\_ Convective SIGMETs

Lesson Grade/Date \_\_\_\_\_  
 Lesson time \_\_\_\_\_  
 CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have an understanding of thunderstorms and their associated phenomena.

**REQUIRED STUDY:**

FAA-H-8083-  
 15-IFH AIM  
 Instrument Rating Practical Test  
 Standards AC 00-6-AvWx  
 AC 00-45-AvWxSvc  
 Vol 5: Segments 5-14

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE II  
LESSON 17  
DUAL -  
GROUND  
FORECASTS & REPORTS**

**LESSON OBJECTIVE:**

During this lesson, the instructor will review weather forecasts with the student.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Area Forecasts
- \_\_\_\_\_ Terminal Aerodrome Forecasts
- \_\_\_\_\_ METARs
- \_\_\_\_\_ Winds / Temperatures Aloft
- \_\_\_\_\_ Pilot Reports
- \_\_\_\_\_ Radar Reports / Radar Summary Chart
- \_\_\_\_\_ Surface Analysis Chart
- \_\_\_\_\_ Weather Depiction Chart

**Lesson Introduction**

- \_\_\_\_\_ Freezing Level Chart
- \_\_\_\_\_ Upper Level Charts
- \_\_\_\_\_ Significant Weather Prognostic Charts
- \_\_\_\_\_ Prognostic Chart
- \_\_\_\_\_ SIGMETs, AIRMETs, & Convective
- \_\_\_\_\_ SIGMETs
- \_\_\_\_\_ Recognition of Critical Weather Situations
- \_\_\_\_\_ Windshear Avoidance

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have a thorough understanding of weather forecasts.

**REQUIRED STUDY:**

FAA-H-8083-  
15-IFH AIM  
Instrument Rating Practical  
Standard AC 00-6-AvWx  
AC 00-45-AvWxSvc  
Vol 7: Segments 1-4

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE II  
STAGE II TEST**

**LESSON OBJECTIVE:**

During this lesson, the student will complete a stage check covering approaches and holding procedures.

**CONTENT:**

**Lesson Review**

**Lesson Review**

**TEST**

- \_\_\_\_\_ Weather Information
- \_\_\_\_\_ Holding Procedures
- \_\_\_\_\_ Terminal Procedures Publication
- \_\_\_\_\_ Approach Procedures
- \_\_\_\_\_ Published Departure Procedures
- \_\_\_\_\_ Standard Terminal Arrival Procedures

- \_\_\_\_\_ ATC Clearances
- \_\_\_\_\_ ILS
- \_\_\_\_\_ DME
- \_\_\_\_\_ Nonprecision Approach
- \_\_\_\_\_ Weather Forecasts & Reports

TEST Grade/Date \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have passed a written test on the objectives in Stage I with a minimum score of 80%

**REQUIRED STUDY:**

Instrument Rating Practical Test Standards  
Vol 1-7: Review Segments as Needed

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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### **STAGE III**

#### **STAGE OBJECTIVE:**

During this stage, the student will learn to plan an IFR cross-country.

#### **STAGE COMPLETION STANDARDS:**

At the completion of this stage the student will pass a written test on the subject areas covered in this Stage with a minimum score of 80%.

**STAGE III  
LESSON 18  
DUAL - GROUND  
CHART REVIEW &  
EN ROUTE PROCEDURES**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to en route IFR publications and procedures.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Airport / Facility Directory
- \_\_\_\_\_ VFR / IFR Low Altitude Planning Chart
- \_\_\_\_\_ En Route Low Altitude IFR Chart
- \_\_\_\_\_ En Route Chart Symbology
- \_\_\_\_\_ Air Traffic Service (ATS) Route System
- \_\_\_\_\_ Intersections and Changeover Points

**Lesson Introduction**

- \_\_\_\_\_ ATS Route Course Changes
- \_\_\_\_\_ Cockpit Management
- \_\_\_\_\_ Position Reporting Requirements
- \_\_\_\_\_ Additional Reporting Requirements
- \_\_\_\_\_ Loss of Communications Procedures (IMC and VMC)

Lesson Grade/Date \_\_\_\_\_

Lesson time \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will have an understanding of IFR navigation charts.

**REQUIRED STUDY:**

- FAA-H-8261-1-IPH
- FAA-H-8083-15-IFH
- AIM
- Instrument Rating Practical Test Standards
- Vol 4: Segments 1-14

**Notes:**

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**STAGE III  
LESSON 19  
DUAL -  
GROUND  
IFR CROSS-  
COUNTRY  
PLANNING**

**LESSON OBJECTIVE:**

During this lesson, the instructor will introduce the student to IFR cross-country flight planning.

**CONTENT:**

**Lesson Introduction**

- \_\_\_\_\_ Charts & Publications
- \_\_\_\_\_ Weather Briefing
- \_\_\_\_\_ NOTAMs
- \_\_\_\_\_ Determination of an Alternate
- \_\_\_\_\_ Preferred IFR Routes
- \_\_\_\_\_ DPs / STARs
- \_\_\_\_\_ Takeoff Minimums

**Lesson Introduction**

- \_\_\_\_\_ Cruising Altitudes
- \_\_\_\_\_ Aircraft Performance
- \_\_\_\_\_ Flight Plan Filing
- \_\_\_\_\_ Cockpit Management
- \_\_\_\_\_ Aeronautical Decision Making & Judgment
- \_\_\_\_\_ Crew Resource Management
- \_\_\_\_\_ Fuel Requirements for IFR Flight

Lesson Grade/Date \_\_\_\_\_  
 Lesson time \_\_\_\_\_  
 CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

At the completion of this lesson, the student will be able to plan an IFR cross-country flight.

**REQUIRED STUDY:**

FAA-H-8083-  
15-IFH AIM  
Instrument Rating Practical Test  
Standards Vol 4: Segments 1-6  
Vol 7: Segments 5-14

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE III  
LESSON 20  
DUAL - GROUND  
END OF STAGE REVIEW**

**LESSON OBJECTIVE:**

The objective of this lesson is to evaluate the student's comprehension of the material presented in the Instrument Pilot Certification ground lessons.

**CONTENT:**

**Lesson Review**

- \_\_\_\_\_ Instrument Pilot Knowledge Test
- \_\_\_\_\_ Weather Information
- \_\_\_\_\_ Cross-Country Flight Planning
- \_\_\_\_\_ Aircraft Systems Related to IFR Flight

**Lesson Review**

- \_\_\_\_\_ Aircraft Flight / Navigation Equipment
- \_\_\_\_\_ Instrument Cockpit Check
- \_\_\_\_\_ FARs Related to IFR Flight

Lesson Grade/Date \_\_\_\_\_  
Lesson time \_\_\_\_\_  
CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

The student must have instrument pilot level knowledge of the items listed for review.

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**STAGE III  
STAGE III TEST**

**LESSON OBJECTIVE:**

This is the Stage III written test

**CONTENT:**

**TEST**

- \_\_\_\_\_ Instrument Charts
- \_\_\_\_\_ Enroute Procedures
- \_\_\_\_\_ IFR Cross-Country Planning

TEST Grade/Date \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

The student shall perform all maneuvers to the standards established by the Instrument Rating Practical Test Standards.

**REQUIRED STUDY:**

FAA-H-8083-15-IFH  
Instrument Rating Practical Test  
Standards Vol 7: Segments 1-14

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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**END OF  
COURSE  
TEST**

**LESSON OBJECTIVE:**

During this lesson, the student will complete a practice Instrument Written Test.

**CONTENT:**

**Lesson Review**

**Lesson Review**

**TEST**

- \_\_\_\_\_ Flight Instruments
- \_\_\_\_\_ Basic Aircraft Indications
- \_\_\_\_\_ Magnetic Compass
- \_\_\_\_\_ NDB Fundamentals
- \_\_\_\_\_ Weather Information
- \_\_\_\_\_ Holding Procedures
- \_\_\_\_\_ Terminal Procedures Publication
- \_\_\_\_\_ Approach Procedures
- \_\_\_\_\_ Published Departure Procedures
- \_\_\_\_\_ Standard Terminal Arrival Procedures
- \_\_\_\_\_ Instrument Charts
- \_\_\_\_\_ Enroute Procedures
- \_\_\_\_\_ IFR Cross-Country Planning

- \_\_\_\_\_ VOR Fundamentals
- \_\_\_\_\_ GPS Fundamentals
- \_\_\_\_\_ ATC Clearances
- \_\_\_\_\_ ILS
- \_\_\_\_\_ DME
- \_\_\_\_\_ Nonprecision Approach
- \_\_\_\_\_ Weather Forecasts & Reports
- \_\_\_\_\_ Autopilot Principles
- \_\_\_\_\_ FAR/AIM

TEST Grade/Date \_\_\_\_\_

CFI/Student Initials \_\_\_\_\_

**COMPLETION STANDARDS:**

The student shall perform all maneuvers to the standards established by the Instrument Rating Practical Test Standards.

**REQUIRED STUDY:**

Instrument Rating Practical Test Standards  
Vol 1-7: Review Segments as Needed

<p><b>Notes:</b></p> <hr/> <hr/> <hr/> <hr/> <hr/>
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