Instrument Pilot Syllabus

Seventh Edition, Second Printing
Update
October 2024

NOTE: Sections with changes are indicated by a vertical bar in the left margin. Text that should be deleted is displayed with a line through it. New text is shown with blue underlined font.

We have changed “student” to “learner” throughout the book to reflect current FAA nomenclature.

We have changed “Pilot’s Operating Handbook (POH)” to “Pilot Information Manual (PIM)” throughout the book to more accurately reflect the book learners use while studying.

On pages iv, 2-3, 9, and 43, we have clarified that this syllabus is specifically for the airplane version of the instrument rating.

Introduction

Pages 1-2, 4-9, and 14, What Else Do You Need?; Requirements for an Instrument Rating; Part 141 vs. Part 61 Schools; Part 141 vs. Part 61 Aeronautical Experience Requirements; Part 141 Learner Information; Explanation of the Gleim *Instrument Pilot Training Record*; Gleim Instrument Pilot Syllabus; Instrument Rating Syllabus Lesson Sequence and Times: These edits clarify language and instructions.

WHAT ELSE DO YOU NEED?

[. . .]

Additionally, you will need to obtain a copy of the ~~Pilot’s Operating Handbook (POH) (sometimes called an~~Pilot Information Manual (PIM) for the make and model of your training airplane. A PIM is similar to a Pilot’s Operating Handbook (POH) but does not include a serial number or the specific weight and balance for that aircraft. It can be purchased from the aircraft manufacturer or a pilot store for study.

REQUIREMENTS FOR AN INSTRUMENT RATING

You must meet a number of requirements to earn your instrument rating. The final step is your FAA practical test, which will be conducted by an appropriate evaluator. Your practical test will consist of an ~~approximately 1- to 2-hour~~ oral exam followed by a ~~1- to 2-hour~~ flight test. ~~You will be well prepared for your practical test by your CFII and your Gleim pilot training materials.~~ By dedicating time and effort to studying and training, you should be thoroughly prepared for your practical test through the guidance of your CFII and the Gleim pilot training materials. In addition, you must meet the following requirements:

[. . .]

4. **[. . .]**

   b. **[. . .]**

      1) Under Part 141, ~~you should be enrolled~~it is recommended that you enroll in the school’s instrument rating course before beginning your study program.

[. . .]

PART 141 VS. PART 61 SCHOOLS

[. . .]

An eligible ~~pilot~~ school may be issued a Part 141 pilot school or provisional pilot school Air Agency ~~c~~Certificate by the FAA after completion of an application process. Part 141 pilot schools are more regulated than Part 61 ~~pilot~~ schools. Additionally, a Part 141 pilot school is required to have its facilities and airplanes inspected and the ground and flight training syllabi approved by the FAA.

The majority of ~~pilot~~flight schools~~,~~ and flight instructors not associated with a Part 141 pilot school~~,~~ provide the required training specified under Part 61. Part 61 ~~pilot~~ schools do not require FAA approval. Part 61 requires 40 hours of instrument time and 50 hours of cross-country flight time as pilot in command (PIC).

The major difference between a Part 141 pilot school and a Part 61 ~~pilot~~ school is that Part 141 requires an FAA approval and 35 hours of instrument time. Part 141 does not have a minimum cross-country experience requirement.

[. . .]

PART 141 VS. PART 61 AERONAUTICAL EXPERIENCE REQUIREMENTS

PART 141 14 CFR 141 Appendix C, Secs. 2., 4.	**PART 61** 14 CFR 61.65

• Hold at least a current private pilot certificate with an airplane rating appropriate to the instrument rating sought
• **35 hr. of instrument training for an initial instrument rating**
• Instrument training time from a CFII including at least one cross-country flight
  ▪ In the category and class of airplane that the course is approved for, and is performed under IFR;
  ▪ At least 250 NM along airways or ATC-directed routing with one segment of the flight consisting of at least a straight-line distance of 100 NM between airports
  ▪ An instrument approach at each airport
  ▪ Three different kinds of approaches with the use of navigation systems
	• Hold at least a current private pilot certificate with an airplane rating appropriate to the instrument rating sought
	• **50 hr. cross-country as PIC**
	  ▪ 10 hr. must be in an airplane
	• **40 hr. of actual or simulated instrument time**
	  ▪ 15 hr. must have been received from a CFII including
	  • 3 hr. in an airplane within 2 calendar months before the date of the practical test
	  • One cross-country flight in an airplane under IFR, with a flight plan filed with an air traffic control facility, and involves
	  ▪ A flight of 250 NM along airways or ATC-directed routing
	  ▪ An instrument approach at each airport
	  ▪ Three different kinds of approaches with the use of navigation systems

USE OF FLIGHT SIMULATORS	**USE OF FLIGHT SIMULATORS**

• Training may be conducted in a full flight simulator, flight training device, or aviation training device, provided it is representative of the aircraft for which the course is approved and the training is given by an authorized instructor.
• Credit for training in a full flight simulator cannot exceed 50% of the total flight training hour requirements of the course or of Part 141 Appendix C Section 4, whichever is less.
• Credit for training in a flight training device, advanced aviation training device, or a combination cannot exceed 40% of the total flight training hour requirements of the course or of Part 141 Appendix C Section 4, whichever is less.
• Credit for training in a basic aviation training device cannot exceed 25% of the total training hour requirements permitted under Part 141 Appendix C Section 4.
• Credit for training in full flight simulators, flight training devices, and aviation training devices if used in combination, cannot exceed 50% of the total flight training hour requirements of the course or of Part 141 Appendix C Section 4, whichever is less.
	• A maximum of 20 hr. of instrument time may be performed in a full flight simulator or flight training device.
	• A maximum of 10 hr. of instrument time may be performed in a basic aviation training device or 20 hr. in an advanced aviation training device if
	  ▪ The device is approved and authorized by the FAA
	  ▪ An authorized instructor provides the instrument time in the device
	  ▪ The FAA approved the instrument training and instrument tasks performed in the device
	• A person may not credit more than 20 total hours of instrument time in a full flight simulator, flight training device, aviation training device, or a combination towards the instrument time requirements of 14 CFR 61.65.

PART 141 LEARNER INFORMATION

[. . .]

Graduation Requirements

You must complete the training specified in this syllabus, with a minimum of 30 hours of ground training in the specified aeronautical knowledge areas and the minimum required hours of flight training. These requirements are reflected in the Gleim ground and flight training syllabus. At the completion of your training, your ~~CFI should~~chief instructor must complete and make a copy of the graduation certificate on page 123 of this syllabus, unless the duties are delegated to an assistant chief instructor or recommending instructor.

[. . .]

EXPLANATION OF THE GLEIM *INSTRUMENT PILOT TRAINING RECORD*

[. . .]

Using the Instrument Pilot Training Record

Front Cover: The front cover of the training record ~~should~~must be filled out by the learner, his or her flight instructor, and the chief flight instructor at the time of enrollment. Spaces provided to record credit awarded for previous ground and flight training ~~should~~must be completed by the chief instructor. The chief instructor ~~should~~must also complete the enrollment certificate (found on page 121 of this syllabus) and place it in the training record.

At the completion of training, the chief instructor ~~should~~must complete the information on the front cover, as appropriate (e.g., graduation, transfer, or termination). If the learner has graduated, the graduation certificate (found on page 123 of this syllabus) ~~should~~must be completed and placed in the training record.

Back Cover: The ground training record should be filled out by the instructor after each ground lesson is completed, regardless of whether ground training is being conducted formally or as a self-study program. The time spent and date of completion should be noted and the record initialed by both the learner and the instructor.

The stage and end-of-course test records should be filled out by the instructor after each stage and end-of-course test has been taken by the learner, graded, and reviewed with the instructor. The date of the test, the result, and the date of the review should be noted. The record should then be initialed by the learner and signed by the instructor. Each stage and end-of-course test answer sheet should also be placed in the training record.

The learner flight evaluation records ~~should~~must be filled out by the chief instructor after each stage check. The date and result of the end-of-course test ~~should~~must be noted and the record initialed by the learner and signed by the ~~instructor or~~ chief instructor ~~(the chief instructor must sign the record for each stage check)~~. Chief instructor tasks may also be delegated to an assistant chief instructor or recommending instructor.

Inside: The flight training record consists of three parts:

1. The record of instructor endorsements is a record of information related to each flight instructor endorsement that is pertinent to the course of training,
2. The instrument pilot flight record is a chronological record of each training flight that is made during the course, and
3. The flight lesson record is an itemized record of the learner's performance on the lesson items listed in each specific flight lesson.

[. . .]

GLEIM INSTRUMENT PILOT SYLLABUS

This syllabus consists of a **ground training syllabus** and a **flight training syllabus**. The ground and flight training may be done together as an integrated course of instruction, or each may be done separately. If done separately, the ground syllabus may be conducted as a home-study course or as a formal ground school under Part 61. Under Part 141, the ground syllabus may be conducted as a formal ground school or through an Internet-based course that issues a graduation certificate with a unique alphanumeric code specific to the learner graduating from that course.

~~This syllabus was constructed using the building-block progression of learning, in which the learner is required to perform each simple task correctly before a more complex task is introduced. This method will promote favorable habit patterns from the beginning.~~ To get the most out of this syllabus, it is recommended that learners complete all tasks in a single lesson before progressing to the next. Each lesson builds upon the knowledge and skills gained in the previous lesson (the building-block progression of learning). However, this syllabus is adjustable, and schools may conduct training in a different order if they prefer. When opting to do so, instructors should make clear notes on the affected lessons. Instructors of a Part 141 pilot school must verify whether training is to be conducted in the order outlined in this syllabus or in a different order, as per the school's approved training course outline.

Ground Training Syllabus

The ground training syllabus contains 11 lessons, which are divided into three stages. The ground training syllabus meets the training requirements of Appendix C to Part 141 and 14 CFR 61.65(b). The ground training can be conducted concurrently with the flight training, with the ground lessons completed in the order as outlined in the lesson matrix if the block method of learning will be followed. ~~Ground training may also be conducted as part of a formal ground school or as a home-study program.~~

~~It is recommended that the lessons be completed in sequence, but the syllabus is flexible enough to meet the needs of an individual learner or of a particular training environment. When departing from the sequence, the instructor is responsible for considering the blocks of learning affected and, if used by a Part 141 pilot school, whether it would affect FAA approval.~~

[. . .]

At the end of each stage, you are required to complete the stage knowledge test before proceeding to the next stage. The end-of-course knowledge test will be available upon completion of the stage three knowledge test. Shortly after the end-of-course test, you should ~~take~~ schedule and sit for the FAA instrument rating (airplane) airman knowledge test. The stage and end-of-course knowledge tests in the ground syllabus will refer you to FAA figures found within the front and back cover and after the end-of-course knowledge test.

[. . .]

INSTRUMENT RATING SYLLABUS LESSON SEQUENCE AND TIMES

[. . .]

14 CFR 61.65, Instrument rating requirements, requires that you have logged at least 50 hours of cross-country time as pilot in command (of which 10 hours must be in an airplane). A total of 40 hours of actual or simulated instrument time in the areas of operation listed in 14 CFR 61.65(c) is required, of which 15 hours must have been received from an authorized instructor. This instrument time must include 3 hours of instrument flight training within 2 calendar months before the date of the practical test and a 250 NM IFR cross-country flight ~~with a total of 3 approaches~~along airways or ATC-directed routing that includes one segment being at least a straight-line distance of 100 NM between airports (for Part 141), an instrument approach at each airport, and three different kinds of approaches with the use of navigation systems. Thus, if you are conducting your training under Part 61, you and your instructor must add at least 5 additional instrument flight training hours to the 35-hour total in the following table. Additionally, you are responsible for ensuring that you have 50 hours of cross-country time as pilot in command. Gleim leaves the selection of which lessons to add up to the learner/instructor to ensure the appropriate content is covered for each learner.

Instrument Rating Ground Training Syllabus -- Airplane Single-Engine Land

Page 24, Ground Lesson 1: Airplane Instruments, Text References: These edits update a subunit title for *Instrument Pilot FAA Knowledge Test Prep* and remove a canceled advisory circular.

Text References

Gleim *Instrument Pilot Flight Maneuvers and Practical Test Prep*
Gleim *Instrument Pilot FAA Knowledge Test Prep*, Study Unit 1, "Airplane Instruments"

Gleim *Instrument Pilot Flight Maneuvers and Practical Test Prep* Reading Assignment	Gleim *Instrument Pilot FAA Knowledge Test Prep* Study Unit 1 Contents
Study Unit 8, "Airplane Flight Instruments and Navigation Equipment" Study Unit 12, "Instrument Flight"	1.1 Compass ~~Errors~~ 1.2 Pitot-Static System 1.3 Altimeter 1.4 Gyroscopes 1.5 Heading Indicator 1.6 Attitude Indicator 1.7 Turn-and-Slip Indicator 1.8 Turn Coordinator (TC) 1.9 Glass Panel Displays

Additional References

[. . .]

Advisory Circulars

- AC 91-26: Maintenance and Handling of Airdriven Gyroscopic Instruments
- ~~AC 91-46: Gyroscopic Instruments – Good Operating Practices~~

Page 31, Ground Lesson 6: Holding and Instrument Approaches, Text References: These edits update the list of subunits for *Instrument Pilot FAA Knowledge Test Prep*.

Text References

Gleim *Instrument Pilot Flight Maneuvers and Practical Test Prep*
Gleim *Instrument Pilot FAA Knowledge Test Prep*, Study Unit 6, "Holding and Instrument Approaches"

Gleim *Instrument Pilot Flight Maneuvers and Practical Test Prep* Reading Assignment	Gleim *Instrument Pilot FAA Knowledge Test Prep* Study Unit 6 Contents
Study Unit 11, "Holding Procedures" Study Unit 15, "Departure, En Route, and Arrival Operations" Part II, Section VI (Introduction) Study Unit 16, "Nonprecision Approach" Study Unit 17, "Precision Approach" Study Unit 18, "Missed Approach" Study Unit 19, "Circling Approach" Study Unit 20, "Landing from an Instrument Approach"	6.1 Contact and Visual Approaches 6.2 LDA and SDF Approaches 6.~~2~~3 Precision Runway Monitor (PRM) 6.~~3~~4 Runway Visual Range (RVR) 6.~~4~~5 Missed Approaches 6.~~5~~6 ILS Specifications 6.~~6~~7 Unusable ILS Components 6.~~7~~8 Flying the Approach 6.~~8~~9 Side-Step Approaches 6.~~9~~10 Holding 6.1~~0~~1 Instrument Approach Charts 6.1~~1~~2 DPs and STARs 6.1~~2~~3 GPS Approaches

Page 33, Ground Lesson 7: Aeromedical Factors, Aeronautical Decision Making, and Crew Resource Management, Text References and Completion Standards: These edits add ADM for *Instrument Pilot FAA Knowledge Test Prep*, Study Unit 7.

Text References

Gleim *Pilot Handbook*
Gleim *Instrument Pilot Flight Maneuvers and Practical Test Prep*
Gleim *Instrument Pilot FAA Knowledge Test Prep*, Study Unit 7, "Aeromedical Factors and Aeronautical Decision Making (ADM)"

Gleim *Pilot Handbook* Reading Assignment	Gleim *Instrument Pilot FAA Knowledge Test Prep* Study Unit 7 Contents
Study Unit 6, "Aeromedical Factors and Aeronautical Decision Making (ADM)"	7.1 Hypoxia and Hyperventilation 7.2 Spatial Disorientation 7.3 Vision and Visual Illusion 7.4 Fatigue 7.5 Aeronautical Decision Making (ADM) and Judgment
Gleim *Instrument Pilot Flight Maneuvers and Practical Test Prep* Reading Assignment	
Appendix A, "Risk Management Overview"	

Additional References

[. . .]

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 7, "Aeromedical Factors and Aeronautical Decision Making (ADM)," of Gleim *Instrument Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

Page 36, Ground Lesson 8: Aviation Weather, Additional References: These edits add a new reference for the *Aviation Weather Handbook*, remove canceled advisory circulars, and update the title of an advisory circular.

Additional References

[. . .]

Aviation Weather Handbook (FAA-H-8083-28)

- Part 2: Weather Theory and Aviation Hazards

Advisory Circulars

- ~~AC 00-6: Aviation Weather~~
- ~~AC 00-24: Thunderstorms~~
- ~~AC 00-30: Clear Air Turbulence Avoidance~~
- ~~AC 00-54: Pilot Windshear Guide~~
- ~~AC 00-57: Hazardous Mountain Winds and Their Visual Indicators~~
- AC 20-113: Pilot Precautions and Procedures to be Taken in Preventing Aircraft Reciprocating Engine Induction System and Fuel System Icing Problems
- AC 61-134: General Aviation Controlled Flight into Terrain Awareness
- AC 91-74: Pilot Guide: Flight in Icing Conditions

Page 38, Ground Lesson 9: Aviation Weather Services, Additional References: These edits add new references for the *Aviation Weather Handbook* and remove a canceled advisory circular.

Additional References

[. . .]

Aviation Weather Handbook (FAA-H-8083-28)

- Part 1: Overview of the United States Aviation Weather Service Program and Information
- Part 3: Technical Details Relating to Weather Products and Aviation Weather Tools

Advisory Circulars

- ~~AC 00-45: Aviation Weather Services~~
- AC 00-63: Use of Flight Deck Displays of Digital Weather and Aeronautical Information

Page 39, Ground Lesson 10: IFR En Route, Additional References: This edit updates the title of an advisory circular.

Additional References

[. . .]

Advisory Circulars

- AC 91-78: Use of ~~Class 1 or Class 2~~ Electronic Flight ~~Bag~~Bags ~~(EFB)~~
- AC 90-100: U.S. Terminal and En Route Area Navigation (RNAV) Operations
- AC 90-108: Use of Suitable Area Navigation (RNAV) Systems on Conventional Routes and Procedures

Instrument Rating Flight Training Syllabus -- Airplane Single-Engine Land

Page 60, Flight Lesson 13: Stage One Check: This update revises item 3.c. and adds new item 3.d.

c. Navigation systems
- ☐☐☐ Intercepting and tracking VOR radials
- ☐☐☐ Intercepting and tracking DME arcs
- ☐☐☐ Tracking a GPS course
- ☐☐☐ Tracking a localizer
- ~~☐☐☐ Additional items at CFI's discretion~~

d. Postflight procedures
- ☐☐☐ IFR postflight procedures
- ☐☐☐ Additional items at CFI's discretion

Page 78, Flight Lesson 29: End-of-Course Test: These edits update item 3.

3. Stage check tasks

a. Preflight preparation
- ☐☐☐ Weather information
- ☐☐☐ Cross-country flight planning

b. Preflight procedures
- ☐☐☐ Airplane systems related to IFR operations
- ☐☐☐ Airplane flight instruments and navigation equipment
- ☐☐☐ Instrument and equipment flight deck check

c. Air traffic control clearances and procedures
- ☐☐☐ Air traffic control clearances and procedures

d. Flight by reference to instruments
- ☐☐☐ Checking instruments and equipment

~~☐☐☐ Departure, en route, and arrival operations~~
~~☐☐☐ Holding procedures~~
- ☐☐☐ Straight-and-level flight
- ☐☐☐ Change of airspeed
- ☐☐☐ Constant airspeed climbs and descents
- ☐☐☐ Rate climbs and descents
- ☐☐☐ Timed turns to magnetic compass headings
- ☐☐☐ Steep turns
- ☐☐☐ Recovery from unusual flight attitudes

e. Navigation systems
- ☐☐☐ Departure, en route, and arrival operations
- ☐☐☐ Holding procedures
- ☐☐☐ Intercepting and tracking navigational systems and DME arcs
- ☐☐☐ Automation management

f. Instrument approach procedures
- ☐☐☐ Nonprecision approach (perform two, one using partial panel)
- ☐☐☐ Precision approach
- ☐☐☐ Missed approach
- ☐☐☐ Circling approach
- ☐☐☐ Landing from an instrument approach

g. Emergency operations
- ☐☐☐ Loss of communications
- ☐☐☐ Loss of primary flight instrument indicators

~~☐☐☐ Checking instruments and equipment~~
~~☐☐☐ Automation management~~

h. Postflight procedures
- ☐☐☐ IFR postflight procedures
- ☐☐☐ Additional items at CFI's discretion

Page 124, Add new Flight Instructor Objectives and Standards Briefing.

FLIGHT INSTRUCTOR OBJECTIVES AND STANDARDS BRIEFING

Under 14 CFR 141.79(d), flight instructors at a Part 141 pilot school must receive a briefing on the objectives and standards of each training course they are authorized to teach. Additionally, flight instructors are required to complete an initial proficiency check in each make and model of aircraft used in the training course and undergo a recurrent proficiency check every 12 calendar months. These briefings and proficiency checks must be conducted by the school's Chief Instructor, Assistant Chief Instructor, or Check Instructor.

Schools approved to use the Gleim syllabus for Part 141 training may utilize the briefing guide below to meet the requirements of 14 CFR 141.79(d)(i).

CFI Briefing Topics	Page	CFI Initials
Introduction		
• Part 141 vs. Part 61 Aeronautical Experience Requirements	5	_____
• Explanation of the Gleim *Instrument Pilot Training Record*	7	_____
• Gleim Instrument Pilot Syllabus	8	_____
• Use of a Flight Simulation Training Device (FSTD) or an Aviation Training Device (ATD)	11	_____
• Instrument Rating Syllabus Lesson Sequence and Times	14	_____
Objectives and Standards		
• Ground Training Course Objectives and Completion Standards	22	_____
• Stage One Objective and Completion Standards (Ground)	23	_____
• Stage Two Objective and Completion Standards (Ground)	28	_____
• Stage Three Objective and Completion Standards (Ground)	34	_____
• Flight Training Course Objectives and Completion Standards	45	_____
• Stage One Objective and Completion Standards (Flight)	47	_____
• Stage Two Objective and Completion Standards (Flight)	61	_____
• Stage Three Objective and Completion Standards (Flight)	72	_____
Pilot School's Standards (Optional)		
• _____		_____
• _____		_____
• _____		_____

_____
Briefer's Signature

_____
Briefer's Name

Chief/Assistant Chief/Check Instructor
Briefer's Role (Circle one)

_____
Date of Briefing

_____
CFI's Signature

_____
CFI's Name

_____
Date of Briefing