



PILOT RISE
LLC

Instrument Rating Syllabus

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Version 2

Description:

This course helps you fulfill the requirements of 14 CFR, Section 61.65 for adding an instrument rating to a pilot certificate for the Airplane category. The focus of this course is to teach you piloting skills not just to pass a test, but to be a safe and knowledgeable pilot.

Students should take notes with all ground lessons and ground videos to be used to study.

This course consists of four major parts:

- Flight training
- Ground training
- Basic Aviation Training Device (BATD)
- Online Ground Course / Homework (Gold Seal Online Ground School - Instrument Pilot)
- Instrument Approach Simulations (PilotApproach.com)

Objective:

The student will obtain the knowledge, skill, and aeronautical experience necessary to meet the requirements for adding an instrument rating to a pilot certificate with an airplane category rating and single-engine land class rating.

Topics:

Ground Training:

1. Private pilot review
2. Cross-country planning
3. Weather
4. Instruments
5. Clearances
6. Instrument Procedures
7. Regulations

Flight Training & BATD:

1. Basic Instrument Flight
2. Instrument maneuvers
3. Instrument procedures
4. Clearances
5. Navigation
6. Emergency operations

Online Ground Training:

Students are expected to have completed Gold Seal Online School & take their written test prior to beginning dual training for their instrument. It is recommended to complete this while building cross-country hours.

It is possible to complete online ground training & the written test during flight training.

BATD Usage:

This course is able to be over \$1,250 cheaper by using our BATD. This will be used for most instruction. We recommend utilizing this beyond just the loggable hours to save on costs.

The BATD is used for training and practicing:

- Instrument Procedures
- Emergency Scenarios
- Experiencing Different Locations & Procedures. Some recommended procedures:
 - **KMTN VOR 15** - DME arc used as the final approach and missed approach
 - **KOSH NDB 36** - See how ADF operates
 - **KCLL LOC BC 17** - Localizer back course and DME arcs
 - **KGUC ILS 6** - Thread of terrain and challenging missed approach

NOTE: By using a BATD (even when not loggable) early on in training, the cost savings will enable you to “fly” much more often reducing how much you forget between lessons. Avoid more than three BATD sessions in a row without a flight in a real aircraft.

Lesson Time Allocation

This is an estimate. It is possible to finish with fewer hours. It is also possible to need more training.

Lesson	Dual	BATD	Solo/PIC	Instrument	Ground
STAGE 1 - Basic Instrument Flight					
1	1.3			1.0	1.0
2		1.5		1.0	1.0
3		1.5		1.3	0.8
4		1.5		1.3	1.0
5	1.5			1.3	0.7
6	1.5			1.3	0.5
STAGE 2 - Approaches					
1		2.0		1.8	1.0
2	2.0			1.8	0.7
3		2.0		1.8	1.0
4			8.5	7.0	
5		1.5		1.8	0.5
STAGE 3 - Checkride Prep					
1	2.5			2.2	1.0
2	3.0			2.5	0.8
3			11.5	10.1	
4	1.8			1.6	2.5
5	2.5			2.2	3.0
Totals	16.1	10.0	20.0	40.0	15.5

STAGE 1 - LESSON 1

Dual - Local

Objective:

The emphasis of this stage is on IFR flight operations. The student will learn precise airplane attitude control by instrument reference and radio navigation. During this lesson, the student is provided with an in-depth review of takeoff and landing procedures and attitude instrument flying with special emphasis on learning precise aircraft control by instrument reference.

GROUND

Lesson Review:

- Flight Instruments & Navigation
Equipment Required for IFR Flight
- Operation of Airplane Systems
- Post Flight Procedures

FLIGHT

Lesson Review:

- Use of Checklists
- Engine Starting
- Cockpit Management
- Pre-takeoff Flight Instrument Check
- Full Panel Instrument
 - Straight & Level
 - Standard-Rate Turns
 - Constant Airspeed & Rate
Climbs & Descents
 - Climbing Turns
 - Descending Turns
 - Power-Off Stalls (Imminent)
 - Power-On Stalls (Imminent)
 - Slow Flight
 - Unusual Attitudes
 - Operations in Turbulence

HOMEWORK

- Sign Up for PilotApproach.com
- Complete the following scenario on PilotApproach.com & Send the report to your instructor:
 - Custom start
 - Airport: KMWL
 - Approach: ILS/LOC 31
 - Mode: Beginner
 - Instrument: 6 Pack
 - GPS: On + Breadcrumbs
 - Speed: Slow Plane (B)
 - Weather: No wind or turbulence

STAGE 1 - LESSON 2

Dual - Local

Objective:

The objective of this lesson is to increase the student's proficiency in attitude instrument flying. The student will also be introduced to IFR flight plans and IFR Clearances.

Complete this lesson in BATD. This saves on cost, especially in the early stages of training.

GROUND

Lesson Introduction:

- IFR Preflight Inspection
- Preflight Check of Instruments, Equipment, and Systems
- IFR Clearances
- IFR Flight Plans

FLIGHT

Review:

- Full Panel Instrument
 - Straight & Level
 - Standard-Rate Turns
 - Constant Airspeed & Rate Climbs & Descents
 - Slow Flight
 - Climbing & Descending Turns
 - Turbulence
 - Unusual Attitudes

HOMEWORK

- PilotApproach.com: Same as lesson 1 but for approach VOR 31
- Practice on BATD alone as needed.

Lesson Introduction:

- Instrument Cockpit Check
- IFR Takeoff Preparations
- Steep Turns
- Instrument Takeoffs
- Timed Turns to Magnetic Headings
- Partial Panel Instrument
 - Straight & Level
 - Level Turns & Standard Rate
 - Constant Airspeed Climbs & Descents
 - Timed Turns
 - Compass Turns
 - Instrument Failures
 - Power On & Off Stalls (Imminent)
 - Slow Flight
- Full Panel Instrument
 - Steep Turns

STAGE 1 - LESSON 3

Dual - Local

Objective:

This lesson has two objectives: to teach orientation in relation to a VOR station and to intercept and track a specified radial.

Complete this lesson in BATD. This saves on cost, especially in the early stages of training.

GROUND

Lesson Introduction:

- VOR Accuracy Test
- VOR Holding
- VOR Orientation
- VOR Radial Interception & Tracking

FLIGHT

Review:

- Full & Partial Panel Instrument
 - Straight & Level
 - Constant Airspeed & Rate Climbs & Descents
 - Timed Turns
 - Compass Turns
 - Unusual Attitudes
 - Power-On & Power-Off Stalls
 - Slow Flight

Lesson Introduction:

- VOR Accuracy Test
- VOR Holding
- VOR Orientation
- VOR Radial Interception & Tracking

HOMEWORK

- PilotApproach.com
 - Practice at KMWL in Beginner Mode using the same settings above. Feel free to add in some weather.
- Review Gold Seal Lessons
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)

STAGE 1 - LESSON 4

Dual - Local

Objective:

The student is given an opportunity to practice VOR orientation, radial interception, and tracking procedures. Tracking of DME arcs and holding on to a DME fix are introduced. The student is also introduced to programming and tracking courses in the GPS.

Consider completing this lesson in BATD. This saves on cost, especially in the early stages of training.

GROUND

Review:

- VOR Orientation
- VOR Interception & Tracking
- VOR Holding

Lesson Instruction:

- DME Fix Holding
- DME Arcs

FLIGHT

Review:

- VOR Orientation
- VOR Radial Interception & Tracking
- VOR Holding

Lesson Introduction:

- GPS Course Programming & Tracking
- DME Arcs
- DME Fix Holding

HOMEWORK

- PilotApproach.com
 - Practice 3 different VOR approaches.
 - Beginner Mode
 - NO GPS
 - 6 Pack Instruments
 - Weather is up to you
- Review Gold Seal Lessons
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)

SUGGESTED PLAN:

- Fly west of T67
- Use the GPS to get to the practice area & when returning.
- If BATD:
 - Use KCLL DME Arcs
- If Aircraft:
 - Use MQP or TTT VOR for DME Arcs

STAGE 1 - LESSON 5

Dual - Local

Objective:

This lesson reviews previously learned procedures and introduces ILS navigation, and localizer and intersection holding.

GROUND

Lesson Introduction:

- ILS Navigation
- Localizer Tracking
- Localizer Holding
- Intersection Holding
- GPS Holding

FLIGHT

Review:

- VOR Procedures
- DME Arcs
- VOR Holding
- GPS Tracking

Lesson Introduction:

- ILS Navigation
- Localizer Tracking
- Localizer Backcourse
- Localizer Holding
- Intersection Holding
- GPS Holding

HOMEWORK

- PilotApproach.com
 - Practice 3 different Localizer or ILS approaches.
 - Beginner Mode
 - NO GPS
 - 6 Pack Instruments
 - Weather is up to you
- Review Gold Seal Lessons
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)

SUGGESTED PLAN:

- Use GPS to CEOLA to head toward KMWL
- Hold at CEOLA for GPS holding
- Use VOR from CEOLA to MQP
- Create a fake 10nm DME Arc around MQP
- Intercept the KMWL Localizer 31 to practice holding at an intersection & localizer holding
- Track Localizer inbound
- Vector student onto the localizer from the other end to treat as a back course.
- Vector onto Localizer course again and practice flying to ILS minimums
- Vector onto the TTT 264 radial and hold over CEOLA
- Track TTT 264 inbound then vector to Hicks

STAGE 1 - LESSON 6

Dual - Local

Objective:

This lesson reviews previously learned procedures to increase proficiency. Procedures to be reviewed will be selected by the instructor. It is not unlikely for a student to need to repeat this lesson for additional review. Training should not continue until the student masters the basics of instrument flying.

GROUND

Review as needed.

FLIGHT

Review:

- VOR Course Interception & Tracking
- Localizer Interception & Tracking
- VOR Holding
- DME Fix Holding
- Localizer Holding
- Localizer Tracking
- Localizer Backcourse
- Intersection Holding
- GPS Usage
- Full Panel Instrument
- Partial Panel Instrument

HOMEWORK

- PilotApproach.com
 - Practice 3 different approaches.
 - Training Mode
 - GPS allowed
 - 6 Pack Instrument
 - No weather
- Review Gold Seal Lessons
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)

STAGE 2 - LESSON 1

Dual - Local

Objective:

This lesson introduces the student to non-precision instrument approach procedures and missed approach planning

Complete this lesson in BATD. This saves on cost, especially in the early stages of training.

GROUND

Lesson Introduction:

- VOR Approaches
- Localizer Approaches
- Straight-In Approach Procedures
- Missed Approach Procedures
- Circle to land approaches

FLIGHT

Review:

- Full Panel Instrument
- System & Equipment Failures

Lesson Introduction:

- VOR Approaches
- Localizer Approaches
- Straight-In Approach
- Missed Approach
- Circle to land approaches

HOMEWORK

- PilotApproach.com
 - Practice KMWL VOR 31 approach
 - Training Mode
 - GPS allowed
 - 6 Pack Instrument
 - Some weather
- Review Gold Seal Lessons
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)

SUGGESTED PLAN (airplane):

- Get to KMWL while practicing full panel instrument & partial panel & equipment failures.
- Practice using the GPS to get to KMWL
- Localizer approach at KMWL to missed
- Join the MQP 077 radial to join the KWEA VOR/DME-A
- Circle to land KWEA to a missed
- If needed, vector to join the KFTW Localizer then continue to Hicks

STAGE 2 - LESSON 2

Dual - Local

Objective:

This lesson is aimed toward developing instrument flight proficiency. First, VOR and front course localizer approaches are reviewed and practiced. Localizer Back Course approach is introduced. The student will also be introduced to circle-to-land approaches.

GROUND

Review:

- VOR Approaches
- Localizer Approaches
- Missed Approach Procedures

FLIGHT

Review:

- VOR Approaches
- Localizer Approaches
- Missed Approach Procedures
(include holding)

HOMEWORK

- PilotApproach.com
 - Practice KMWL VOR 31 & ILS 31 approach
 - Training Mode
 - NO GPS
 - 6 Pack Instrument
 - Some weather
- Review Gold Seal Lessons
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)

SUGGESTED PLAN (airplane):

- When introducing the localizer back course approach, create a fake approach into KMWL 13 since there isn't a good back course approach nearby.

STAGE 2 - LESSON 3

Dual - Local

Objective:

To increase proficiency by review and practice of those procedures listed. In addition, the student will be introduced to ILS approach procedures, GPS approach procedures, and no-gyro radar vectoring & approaches.

Complete this lesson in BATD.

GROUND

Lesson Introduction:

- ILS Approaches
- GPS Approaches
 - Full procedures
 - Vector to final
 - LPV vs LP vs LNAV/VNAV vs LNAV+V vs LNAV
- Radar Approaches
- No-gyro vectoring
- Engine Failure
- Loss of Communications

FLIGHT

Review:

- VOR Approaches (as required)
- Localizer Approach (as required)
- Missed Approach Procedures (including holding)
- DME Arcs

Lesson Introduction:

- Localizer Back Course Approaches
- ILS Approaches
- GPS Approaches
 - Full Procedures
 - Vector to Final
- Radar Approaches
- No-gyro vectoring
- Partial Panel Approach Procedures
- Engine Failure
- Loss of Communications

HOMEWORK

- PilotApproach.com
 - Practice KMWL VOR 31 & ILS 31 approach
 - Practice Mode
 - NO GPS
 - 6 Pack Instrument
 - Some weather
- Review Gold Seal Lessons
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)

STAGE 2 - LESSON 4

Solo - Local

Objective:

The student will practice what they have learned with a safety pilot. This can also be done while accumulating cross-country time. The student is strongly encouraged to practice in a BATD as needed.

FLIGHT

Review areas as directed by the instructor.

HOMEWORK

- PilotApproach.com
 - Practice Multiple Approaches
 - NO GPS
 - Practice and Testing Modes
- Review Gold Seal Lessons

STAGE 2 - LESSON 5

Dual - Local

Objective:

The objective of this lesson is to increase the student's knowledge and proficiency in the procedures listed below. This includes full and partial panel approaches. It is expected that students may need to repeat this lesson multiple times until they are consistently completing all approaches to the required standards.

Complete this lesson in BATD.

GROUND

Review as needed

FLIGHT

Review:

- Approaches
 - ILS
 - Localizer
 - VOR
 - GPS
- Partial Panel Approach Procedures
- Missed Approach Procedures (including holding)
- Landing from straight-in or circling approach
- Engine Failure

HOMEWORK

- PilotApproach.com
 - Practice Multiple Approaches
 - NO GPS
 - Testing Mode
- Review Gold Seal Lessons
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)

STAGE 3 - LESSON 1
Dual - Cross Country

Objective:

During this lesson, the student will plan and conduct an IFR cross-country flight. During the flight, the student will become familiar with IFR departure and arrival procedures.

GROUND

Review:

- Filing an IFR Flight Plan
- ATC Clearances
- Postflight Procedures

Lesson Introduction:

- IFR Cross-country Flight Planning
 - Obtaining weather
 - Performance, limitations, & systems
 - Calculation of magnetic heading, ETE, and fuel consumption.
- Cancelling and IFR flight plan

FLIGHT

Review:

- ATC Clearances
- Navigation using VOR & GPS
- Precision & Non-precision Approaches
- Simulated Emergency Procedures
- Landing from a straight-in or circling approach.

Lesson Introduction:

- Use of IFR enroute charts
- Enroute course changes

HOMEWORK

- PilotApproach.com
 - Practice Multiple Approaches
 - NO GPS
 - Testing Mode
- Review Gold Seal Lessons
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)

SUGGESTED PLAN:

- Great IFR cross-country airports that feature multiple approach options:
 - KADM
 - KTPL
 - KACT
 - KTYR
 - KGVT
 - KGYI
 - KABI

STAGE 3 - LESSON 2

Dual - Cross Country

Objective:

This flight gives the student an in-depth and in-detail exposure to IFR cross-country operations, including departure, enroute, emergency, and arrival procedures. The flight must be a distance of at least 250 nm. in length 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 and involves an instrument approach at each airport; and involves three different kinds of approaches with the use of navigation systems.

GROUND

Review:

- IFR Cross-country planning
- Filing an IFR Flight Plan
- Preflight Check of Instrument & Equipment
- Obtaining an IFR Clearance
- Post flight procedures

FLIGHT

Review:

- IFR Clearances
- Departure Procedures
- Navigation using VORs & GPS
- Holding
- Enroute Course Changes
- Simulated Emergency Procedures
 - Loss of communications
 - Radio Failure
 - Instrument Failure
 - System Failure
 - Icing
 - Turbulence
 - Low Fuel
- Use of arrival procedures
- Use of Radar
- At least 3 different instrument approaches, including 1 at each airport.
- Circling approach procedures
- Missed approach procedures
- Landing from a straight in or circling approach.

HOMEWORK

- PilotApproach.com
 - Practice Multiple Approaches
 - NO GPS
 - Testing Mode
- Oral Study Prep

STAGE 3 - LESSON 3

Solo - Local

Objective:

The student will practice what they have learned with a safety pilot. This can also be done while accumulating cross-country time.

FLIGHT

Review areas as directed by the instructor.

HOMEWORK

- PilotApproach.com
 - Practice Multiple Approaches
 - NO GPS
 - Testing Mode
 - All Weather
- Oral Study Prep

STAGE 3 - LESSON 4

Dual - Local

Objective:

The objective of this lesson is to evaluate the student's proficiency in preparation for the practice checkride.

GROUND

As determined by the Flight Instructor, cover any areas in which the student is deficient.

FLIGHT

As determined by the Flight Instructor, cover any areas in which the student is deficient.

HOMEWORK

- PilotApproach.com
 - Practice Multiple Approaches
 - NO GPS
 - Testing Mode
- Oral Study Prep
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)

STAGE 3 - LESSON 5

Dual - Local

Objective:

The student will be evaluated by a designated instructor to see if they are prepared for their instrument checkride.

GROUND

- Pilot Qualifications
- IFR Cross-Country Flight Planning
- Weather Planning
- Filing an IFR Flight Plan
- ATC Clearances
- Preflight Procedures
- Postflight Procedures
- Review of Maintenance Logbook

FLIGHT

- Starting Engine
- Taxiing
- Instrument Check Procedures
- Run-Up
- Use of Checklists
- Instrument Takeoff
- Flight by Reference to Instruments
 - Partial Panel
 - Turns to a heading
 - Constant airspeed & rate climbs & descents
 - Timed turns
 - Unusual attitudes
- Tracking & Intercepting a VOR or GPS course.
- VOR approach
- GPS approach
- ILS approach
- Missed approach to holding
- Circling-to-land approach
- Landing from a straight-in or circling approach.
- DME Arcs
- Loss of communications
- Emergency Operations
- Partial panel during an approach

HOMEWORK

- Oral Study Prep
- Practice on BATD alone as needed
(be careful not to practice the wrong thing.
This is why PilotApproach.com is important.)