# Instrument Rating Training Syllabus and Training Log

## Version 2.0

## Training Overview

**Student:** ______________________________________________________________________________

**Instructor:** ______________________________________________________________________________

**Date training started:** __________________

## AIRPORTS VISITED

- APC
- C83
- CCR
- DVO
- HAF
- HWD
- LVK
- MHR
- MOD
- MRY
- O69
- O88
- OAK
- PAO
- RHV
- SAC
- SCK
- SJC
- SMF
- SNS
- SQL
- STS
- STS
- TCY
- WVI

## Progress Checklist

- FAA knowledge test – score: __________
- Instrument phase check written exam
- Instrument phase check
- FAA checkride

## Minimum FAA Requirements Met

- 40 hours instrument reference training
- Long IFR cross-country
- 50 hours cross-country PIC
## Document References

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Phase 1: Basic Instrument Flying – Sim

LESSON 1 – Introduction

☐ Completed: _________________

HOMEWORK

☐ Assigned: _________________

☐ Machado Chapter 1 (Starting Your Instrument Training)
☐ IFH Introduction
☐ FAR 91.123 (Compliance with ATC clearance and instructions)
☐ FAR 91.155 (Basic VFR Weather Minimums)
☐ FAR 91.157 (Special VFR Weather Minimums)
☐ FAR 91.173 (ATC clearance and flight plan required)

HANDOUTS

☐ Instrument rating requirements
☐ Purchase list
☐ Syllabus

GROUND

☐ Instrument rating requirements
☐ Use of simulator
☐ Use of hood
☐ Use of actual IMC weather
☐ Cross-country requirements
☐ Purchase list
☐ Syllabus
☐ Ground school
☐ Jeppesen vs. NACO charts
☐ DUAT/DUATS account
☐ When IFR is required (VFR minimums, SVFR, IFR clearance)

LESSON 2 – Buying Supplies

☐ Completed: _________________

HOMEWORK

☐ Assigned: _________________

☐ Buy:
  ☐ IFH
  ☐ IPH
  ☐ PTS
  ☐ PHAK
  ☐ Machado
  ☐ FAR/AIM
  ☐ Enroute charts
  ☐ Approach charts
  ☐ AW
  ☐ AWS
  ☐ A/FD
  ☐ POH
  ☐ Kneeboard
LESSON 3 – Decision Making and Physiology

- Completed: ________________

HOMEWORK

- Assigned: ________________

- Machado Chapter 4 (Humans)
- IFH Chapter 1 (Human Factors)
- AIM Chapter 8 (Medical Facts for Pilots)
- FAR 91.3 (Responsibility and authority of the Pilot in Command)

GROUND

- IFR decision making
- Hazardous attitudes
- Aeronautical Decision Making
- Human spatial orientation
- Spatial disorientation
- Hypoxia and CO poisoning
- Optical illusions
- Medical condition (IMSAFE)

LESSON 4 – Instruments

- Completed: ________________

HOMEWORK

- Assigned: ________________

- Machado Chapter 2 (Your Flight Instruments)
- IFH Chapter 3 (Flight Instruments)
- IFH 11-3 to 11-8 (Aircraft System Malfunctions)
- POH (Systems)
- FAR 91.121 (Altimeter settings)

GROUND

- Theory, interpretation, and failures of:
  - Vacuum system
  - Attitude indicator
  - Heading indicator
  - Electrical system
  - Turn coordinator
  - Static System
  - Altimeter
  - Vertical speed indicator
  - Pitot System
  - Airspeed indicator
  - Compass

LESSON 5 – Attitude Instrument Flying

- Completed: ________________

HOMEWORK

- Assigned: ________________

- Machado Chapter 3 (A Plan for the Scan)
- IFH Chapter 2 (Aerodynamic Factors)
- IFH Chapter 4 [section 1 or 2 as appropriate] (Airplane Attitude Instrument Flying)
- IFH 5-1 to 5-26 (Airplane Basic Flight Maneuvers: Analog Instrumentation)
- IFH 5-33 to 5-53 [if appropriate] (Airplane Basic Flight Maneuvers: Electronic Flight Display)

GROUND

- Scan, interpretation, control
- Control and performance method
- Primary and supporting instruments
- Straight and level
- Turns
- Constant speed climbs and descents
- Constant rate climbs and descents
- Changing speed
- Triangles of agreement and instrument cross-check
- Standard performance

FLIGHT

- Straight and level
- Turns
- Constant speed climbs and descents
- Constant rate climbs and descents
- Changing speed
- Analyzing the plane for standard performance
  - Vy climb
  - Cruise climb
  - Cruise level
  - Cruise descent
  - Approach level
  - Non-precision approach descent
  - Precision approach descent
LESSON 6 – Transitions and Exercises

☑ Completed: _________________

HOMEWORK

☑ Assigned: _________________
☑ IFH 5-26 to 5-32 (Airplane Basic Flight Maneuvers: Analog Instrumentation)
☑ IFH 5-53 to 5-61 [if appropriate] (Airplane Basic Flight Maneuvers: Electronic Flight Display)

GROUND

☐ 6 Ts
☐ Unusual attitude recovery
☐ Instrument takeoff

FLIGHT

☐ Racetrack
☐ Procedure turn
☐ Teardrop turn
☐ Pattern A
☐ Pattern B
☐ Vertical S
☐ Steep turns
☐ Power-off stalls
☐ Power-on stalls
☐ Unusual attitude recovery
☐ Instrument takeoff

LESSON 7 – Partial Panel

☑ Completed: _________________

GROUND

☑ Vacuum failure [AHRS failure]
☑ Timed turns
☑ Compass turns

FLIGHT

☑ Straight and level
☑ Climbs and descents
☑ Turns
☑ Racetrack
☑ Procedure turn
☑ Teardrop turn
☑ Pattern A
☑ Pattern B
☑ Vertical S
☑ Unusual attitude recovery
LESSON 8 – The IFR System

- Completed: ________________

HOMEWORK

- Assigned: ________________

- Machado Chapter 7 (How the IFR System Works)
- IPH Chapter 1 (IFR Operations)
- IFH Chapter 9 (The Air Traffic Control System)
- IFH 10-27 to end (Conducting an IFR Flight)
- Skim AIM 5-1 to 5-5 (Air Traffic Procedures)
- IPH Appendix B (Staying Within Protected Airspace)

GROUND

- Overview of IFR System
- Concept of protected airspace

LESSON 9 – Enroute Charts

- Completed: ________________

HOMEWORK

- Assigned: ________________

- Machado Chapter 15 (IFR Enroute Charts)
- AIM 5-3 (En Route Procedures)
- IFH 8-1 to 8-11 (Airspace and Enroute Charts)
- IPH Chapter 3 (En Route Operations)
- NACO/Jeppesen chart legend
- FAR 91.177 (Minimum altitudes for IFR operations)
- FAR 91.179 (IFR cruising altitude)
- FAR 91.181 (Course to be flown)

GROUND

- Enroute chart overview
  - Scale
  - Navigation aids
  - VOR
  - NDB
  - Victor airways
    - Distances
    - Change-over point
    - MEA (and GPS MEA)
    - MOCA
    - MCA
  - Intersections
    - DME distance
    - MRA
  - T routes and Q routes
  - Off route navigation and OROCA
  - Airports and airport data
  - Airspace
  - Special use airspace
  - MTRs
  - FSS frequencies
  - ARTCC boundaries and frequencies
**LESSON 10 – VOR Intercept and Tracking**

- Completed: ________________

**HOMEWORK**

- Assigned: ________________

- Machado 5-1 to 5-18 (*Electronic Navigation: VORs*)
- IFH 7-1 to 7-3 (*Radio Waves*)
- IFH 7-8 to 7-17 (*VOR*)
- AIM 1-1-3 to 1-1-6 (*VOR*)
- AIM 1-1-8 (*Service Volume*)
- AIM 1-1-12 to 1-1-14 (*Navaid IDs*)
- FAR 91.171 (*VOR Equipment Check for IFR Operation*)

**GROUND**

- VOR check
- VOR tracking

**FLIGHT**

- VOR check
- VOR tracking full-panel
- VOR tracking partial-panel

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**LESSON 11 – DME and DME Arcs**

- Completed: ________________

**HOMEWORK**

- Assigned: ________________

- Machado 5-19 to 5-23 (*Electronic Navigation: DME*)
- IFH 7-17 to 7-19 (*DME*)
- AIM 1-1-7 (*DME*)
- IPH 5-38 (*DME Arcs*)

**GROUND**

- DME operation
- DME ground speed
- DME arcs

**FLIGHT**

- Basic DME operation
- DME arcs full-panel
- DME arcs partial-panel

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**LESSON 12 – NDB Intercept and Tracking**

- Completed: ________________

**HOMEWORK**

- Assigned: ________________

- IFH 7-3 to 7-8 (*NDB/ADF*)
- AIM 1-1-2 (*NDB*)

**GROUND**

- NDB tracking

**FLIGHT**

- NDB tracking full-panel
- NDB tracking partial-panel
LESSON 13 – Enroute GPS Navigation

- Completed: ____________________

**HOMEWORK**

- Assigned: ____________________
- IFH 7-26 to 7-36 (GPS)
- IFH 7-46 to 7-48 (Required Navigation Performance)
- IPH Appendix A (Airborne Navigation Databases)
- AIM 1-1-19(a) to (n) (GPS)
- Appropriate GPS manual chapters

**GROUND**

- GPS unit operation

**FLIGHT**

- Basic GPS use
- Direct-to
- Flight plans
  - Direct-to
  - Activating legs
- DME arcs

LESSON 14 – Clearances

- Completed: ____________________

**HOMEWORK**

- Assigned: ____________________
- IFH 10-3 to 10-5 (Clearances)
- AIM 4-4 (ATC Clearances)
- AIM 5-2-3 (Abbreviated IFR Departure Clearance)

**GROUND**

- CRAFT
- As filed
- Direct
- Getting the clearance at a towered airport
- Pop-up clearances
- Verifying the clearance
- Setting up communications and navigation radios

LESSON 15 – Departures

- Completed: ____________________

**HOMEWORK**

- Assigned: ____________________
- Machado Chapter 14 (Instrument Departures)
- AIM 5-2 (Departure Procedures)
- IFH 10-5 to 10-7 (Departures)
- IPH Chapter 2 (Takeoffs and Departures)

**GROUND**

- Terrain clearance standards
- ODP
- SID
- Radar departure
- Diverse departure
- Departure minimums
- RNAV departures
- No published departure information

**FLIGHT**

- Fly various clearances and departures

LESSON 16 – Reports

- Completed: ____________________

**HOMEWORK**

- Assigned: ____________________
- IFH 10-7 to 10-8 (Reports)
- AIM 5-3-2 and 5-3-3 (Position Reporting and Additional Reports)
- FAR 91.183 (IFR Radio Communication)
- FAR 91.187 (Operation Under IFR in Controlled Airspace: Malfunction Reports)

**GROUND**

- Radar reports
- Non-radar reports
LESSON 17 – Holds

☑ Completed: ________________

HOMEWORK

☑ Assigned: ________________

☑ Machado Chapter 6 (Holding Patterns)
☑ IFH 10-9 to 10-12 (Holds)
☑ IPH 3-23 to 3-26 (Holding Procedures)
☑ AIM 5-3-7 (Holding)

GROUND

☑ Purpose
☑ Holding clearance
☑ Holding procedure
  ☐ Entering the hold
  ☐ Flying the hold
  ☐ Leaving the hold

FLIGHT

☑ Holds full-panel
☑ Holds partial-panel
☑ VOR holds
☑ Intersection holds
☑ NDB holds
☑ GPS holds
Phase 2: Approaches – Sim

LESSON 18 – Arrivals

☐ Completed: ____________________

HOMEWORK

☐ Assigned: ____________________

☐ Machado 12-35 to 12-37 (Approach Chart Analysis: STARs)
☐ AIM 5-4-1 (STARs)
☐ IFH 10-8 to 10-9 (Planning the Descent, STARs)
☐ IPH Chapter 4 (Arrivals)

GROUND

☐ STARs

LESSON 19 – Approach Theory

☐ Completed: ____________________

HOMEWORK

☐ Assigned: ____________________

☐ Machado Chapter 11 (Understanding Approach Charts)
☐ AIM Chapter 2 (Aeronautical Lighting and Other Airport Visual Aids)
☐ AIM 5-4 (Arrival Procedures)
☐ IFH 10-12 to 10-22 (Approaches)
☐ IPH Chapter 5 (Approach)
☐ FAR 91.175 (Takeoff and landing under IFR)
☐ AIM 5-4-3 to 5-4-4 (Approach Control)
☐ AIM 5-4-6 to 5-4-9 (Approaches)
☐ AIM 5-4-18 (Side Steps)
☐ AIM 5-4-19 (Minimums)
☐ AIM 5-4-20 (Missed Approach)

GROUND

☐ TERPs and obstacle clearance
☐ Approach segments
☐ Course reversal
☐ Circling approaches
☐ Side steps
☐ When to go missed
☐ Descending below MDA/DH
☐ Missed approach
☐ Non-precision approaches
☐ Precision approaches
☐ Approach and runway lights
☐ Runway markings
LESSON 20 – Approach Plates

- Completed: ____________________

HOMEWORK

- Assigned: ____________________

- IFH 8-13 to end (Approach Charts)
- AIM 5-4-5 (IAP Charts)
- NACO/Jeppesen approach plate legend

GROUND

- Approach plates
  - Communications frequencies
  - Plan view
  - Profile view
  - Minimums
  - Missed approach
- Airport diagrams

LESSON 21 – Approach Setup

- Completed: ____________________

GROUND

- Chart and FDC NOTAMs
- Deciding on an approach
- Pre-approach checklist
- Briefing the approach
- Setting radios
- Pre-landing checklist

LESSON 22 – VOR-Style Approaches

- Completed: ____________________

HOMEWORK

- Assigned: ____________________

- Machado 5-35 to 5-40 (Electronic Navigation: SDF, LDA, LORAN)
- Machado 12-18 to 12-22 (Approach Chart Analysis: LDA)
- Machado 12-26 to 12-33 (Approach Chart Analysis: VOR)
- IFH 7-29 (LOC)
- IFH 7-45 (SDF, LDA)
- IPH 5-59 to 5-60 (VOR Approach)
- IPH 5-63 to 5-68 (LOC, LDA SDF)
- AIM 1-1-10 (SDF)

GROUND

- VOR
- LOC
- LOC BC
- LDA
- SDF
- Approach setup
- Approach flying procedure

FLIGHT

- VOR
- LOC
- LOC BC
- LDA
- SDF
LESSON 23 – NDB Approaches

- Completed: ________________

HOMEWORK

- Assigned: ________________
- Machado 5-48 to 5-58 (*Electronic Navigation: ADF*)
- Machado 12-22 to 12-26 (*Approach Chart Analysis: NDB*)
- IPH 5-60 to 5-61 (*NDB Approach*)

GROUND

- NDB approaches
- Approach setup
- Approach flying procedure

FLIGHT

- NDB approaches

LESSON 24 – GPS Approaches

- Completed: ________________

HOMEWORK

- Assigned: ________________
- Machado 5-41 to 5-47 (*Electronic Navigation: GPS*)
- Machado Chapter 13 (*GPS Approach Charts*)
- AIM 1-1-19(o) to (q) (*GPS*)
- AIM 1-1-20 (*WAAS*)
- AIM 1-2 (*RNAV and RNP*)
- IPH 5-44 to 5-50 (*RNAV Approaches*)
- Appropriate GPS manual chapters

GROUND

- GPS approaches
- GPS unit operation
- Approach setup
- Approach flying procedure

FLIGHT

- GPS approaches

LESSON 25 – ILS Approaches

- Completed: ________________

HOMEWORK

- Assigned: ________________
- Machado 5-23 to 5-35 (*Electronic Navigation: ILS*)
- Machado 12-1 to 12-18 (*Approach Chart Analysis: ILS*)
- AIM 1-1-9 (*ILS*)
- IPH 5-50 to 5-56 (*ILS*)
- IFH 7-37 to 7-45 (*ILS*)

GROUND

- ILS system
- ILS approaches
- ILS flying procedure
- Equipment substitution
- Inop approach lights and equipment

FLIGHT

- ILS approaches
Phase 3: Flying the Airplane

LESSON 26 – Weather

☑ Completed: ____________________

HOMEWORK

☑ Assigned: ____________________

☑ Machado Chapter 9 (IFR Aviation Weather Theory)
☑ Machado Chapter 10 (IFR Weather Charts)
☑ PHAK 10 (Weather Theory)
☑ PHAK 11 (Weather Reports, Forecasts, and Charts)
☑ AIM 7-1 (Meteorology)
☑ IFH 10-22 to 10-26 (Instrument Weather Flying)
☑ ASF Course – Weather Wise
☑ ASF Course – SkySpotter
☑ ASF Course – Thunderstorms: A Case Study

GROUND

☑ Weather theory
☑ Important parts: clouds, visibility, turbulence, icing
☑ FSS briefings
☑ DUATS
☑ Other weather sources
☑ Predicting thunderstorms
☑ Predicting turbulence
☑ Predicting ice
☑ Predicting fog
☑ Use of FSS/EFAS in the air

LESSON 27 – Preflight and Cockpit Organization

☑ Completed: ____________________

HOMEWORK

☑ Assigned: ____________________

☑ IFH 3-34 to 3-27 (Preflight)
☑ FAR 91.21 (Portable Electronic Devices)
☑ FAR 91.205 (Powered Civil Aircraft with Standard Category U.S. Airworthiness Certificates: Instrument and Equipment Requirements)
☑ FAR 91.215 (ATC Transponder and Altitude Reporting Equipment and Use)
☑ FAR 91.411 (Altimeter System and Altitude Reporting Equipment Tests and Inspections)
☑ FAR 91.413 (ATC Transponder Tests and Inspections)

HANDOUT

☑ Preflight checklist

GROUND

☑ Required inspections
☑ Required equipment
☑ Instrument preflight items
☑ Lapboard organization
☑ Timer
LESSON 28 – Flying the Airplane

- Completed: ________________

**FLIGHT**

- Spatial disorientation demo
- Straight and level
- Constant rate climbs and descents
- Constant airspeed climbs and descents
- Turns
- Changing airspeed
- Analyzing the plane for standard performance
- Partial panel
- VOR tracking
- DME arcs
- NDB tracking
- GPS operation
- Holds

LESSON 29 – Other Maneuvers

- Completed: ________________

**HOMEWORK**

- Assigned: ________________

- IFH 5-22 to 5-28 (*Steep Turns, Stalls, Unusual Attitudes*)

**FLIGHT**

- Steep turns
- Power-off stalls
- Power-on stalls
- Unusual attitudes full-panel
- Unusual attitudes partial-panel

LESSON 30 – Approaches

- Completed: ________________

**FLIGHT**

- VOR
- LOC
- LDA
- GPS
- ILS
- NDB
Phase 4: Cross-Country Flights and Miscellaneous

LESSON 31 – Planning a Long IFR Flight

☑ Completed: ________________

HOMEWORK

☑ Assigned: ________________

☑ Machado Chapter 16 (IFR Flight Planning)
☑ AIM 5-1 (Preflight)
☑ FAR 91.167 (Fuel Requirements for Flight in IFR Conditions)
☑ FAR 91.169 (IFR Flight Plan: Information Required)

GROUND

☑ Planning the departure
☑ Planning the arrival
☑ Planning the enroute portion based on terrain and weather
☑ Preferred/TEC routes
☑ Alternates
☑ Filing the flight plan
☑ Receiving clearances
  ☑ Clearance delivery
  ☑ Ground
  ☑ Non-towered

LESSON 32 – Other Approaches and Clearances

☑ Completed: ________________

HOMEWORK

☑ Assigned: ________________

☑ Machado 12-33 to 12-35 (Approach Chart Analysis: Contact and Visual)
☑ IFH 10-26 to 10-27 (VFR on Top)
☑ IPH 5-43 to 5-44 (Contact and Visual Approaches)
☑ IPH 5-61 to 5-63 (Radar Approaches)
☑ AIM 5-4-10 (Timed Approaches)
☑ AIM 5-4-11 (Radar Approaches)
☑ AIM 5-4-21 (Visual Approach)
☑ AIM 5-4-22 (Charted Visual Flight Procedures)
☑ AIM 5-4-23 (Contact Approach)

GROUND

☑ Visual approach
☑ Charted visual flight procedures
☑ Contact approach
☑ VFR-on-top
☑ Cruise clearance
☑ Block altitudes
☑ Timed approaches from a hold
☑ PAR/ASR approaches
☑ No-gyro approach
LESSON 33 – Emergencies

- Completed: ____________________

HOMEWORK

- Assigned: ____________________

- IFH 11-1 to 11-3 (Adverse Weather)
- IFH 11-8 to 11-15 (Communication/Navigation System Malfunction)
- FAR 91.185 (IFR operations: Two-way radio communications failure)
- DVD: NASA In-Flight Icing Training for Pilots

GROUND

- Communications failure
- Equipment failure
- Pitot-static failure
- Alternator failure
- Total electrical failure
- Low fuel
- Icing
  - Anti-icing systems
  - De-ice systems
- Weather

FLIGHT

- Zero-zero takeoff
- Zero-zero approach
- Simulated communications failure

LESSON 34 – Final Issues

- Completed: ____________________

HOMEWORK

- Assigned: ____________________

- Machado Chapter 17 (IFR Pilot Potpourri)
- FAR 61.51 (Pilot Logbooks)
- FAR 61.57(c) (Recency of Experience: Pilot in Command)
- ASF Course – IFR Adventure: Rules to Fly By
- ASF Course – Single-Pilot IFR

GROUND

- Logging instrument time
- Safety pilots
- IFR currency
- Personal minimums