sporty's®

INSTRUMENT RATING FLIGHT SIM TRAINING GUIDE

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FLIGHT SIM TRAINING GUIDE INSTRUMENT RATING

INTRODUCTION

Welcome to the *Flight Sim Training Guide* for the Instrument Rating from Sporty's Academy. This book is intended to help you prepare for a number of your flight lessons as you will find them in *Sporty's® Instrument Rating Training Course Outline*. The *Flight Sim Training Guide* lessons are designed as a self-guided learning curriculum. Understanding and completing these lessons prior to the designated flight lesson will enhance your learning in the actual airplane, with the potential to reduce time and costs in your training.

CONCEPT

The *Flight Sim Training Guide* for the Instrument Rating, in conjunction with the *Instrument Rating Training Course Outline*, 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. While the *Flight Sim Training Guide* can be used as a stand-alone product, it is best utilized as a part of *Sporty's Instrument Rating Course*. For optimum effectiveness, the reading material and viewing of the associated video volumes should be completed prior to the respective flight sim session.

ELEMENTS

The *Flight Sim Training Guide* for the Instrument Rating was designed with *Microsoft® Flight Simulator* (MSFS) in mind. Many of the elements of this book can be successfully implemented on older versions of *Microsoft Flight Simulator* and with any number of other flight simulation products available. The keys to successful implementation are good graphics quality and realistic modeling characteristics for the airplane being flown in the simulation. You generally will not get a realistic "feel" in home simulation equipment but the airplane must act like an airplane for a positive transfer of learning to occur when moving to the real airplane. When using alternative simulation software, enter the settings found under "FS Settings:" for each session manually for an optimum session experience.

FS SESSIONS

Each flight simulator session is organized for self-guided study. You will find the following parts for each session:

Completion Details Box – This box provides a place for you to record your completion of each session. Space has been provided to allow you to repeat and record the session multiple times as you go back to practice a session again. Repeating a session is not a requirement but can be a useful part of the learning process.

Objective – The objective lets you know the intention of the session.

Tasks to Accomplish – Tasks are individual maneuvers that you can accomplish in the session. If you are not sure how to complete a task, review the maneuver in the books and videos indicated under "For More Information." You can also review the animated maneuver in *Sporty's Instrument Rating Course*.

Aircraft Settings – This section provides information on the starting point for the aircraft.

Weather Settings – This section provides information on the manual settings to use for MSFS or your preferred simulator. Some lessons will require changing the weather settings while in flight to improve the user experience. It's beneficial to be fluent in changing weather settings for your simulation program.

Performance Goals – These goals are what you should strive for during your session. The session is about self-guided study so nobody will be checking up on you, but be honest with yourself. Meeting the goals will provide the most benefit in your airplane training.

Scenario – The scenario is a flow that will allow you to complete all of the tasks within the session. The scenario may also provide additional details to make your practice more beneficial.

For More Information – The FMI section provides a list of resources for you to review in preparation for and again after the session. The videos listed are a part of *Sporty's Instrument Rating Course*. The books listed are published by the FAA and may be purchased in printed form from Sporty's Pilot Shop (sportys.com). You can also obtain PDF versions of the books in the Library section of Sporty's course. The Sporty's videos list specific segments for review.

Notes – This section is provided for you to create your own notes and questions after the session. Take any questions that you have to your next meeting with your flight instructor.

EFB INTEGRATION

When using a simulator to better understand or train in the IFR system it is recommended to take advantage of EFB or Electronic Flight Bag integration. To be able to sync ForeFlight or Garmin Pilot to your simulator and watch your aircraft move on the map or use approach plates is a great feature that wasn't around on previous iterations of Microsoft Flight Simulator. Sporty's Flight Simulation department highly recommends using an EFB in tandem with your simulator when practicing arrivals, approaches, or departures. For instruction on how to sync your EFB with a flight simulator visit:

https://ipadpilotnews.com/2022/05/tips-for-using-aviation-apps-with-home-flight-simulators/

IFR SESSION 7

This session will help you prepare for lesson 12 in Sporty's Instrument Rating TCO.

Objective:

During this lesson, the instructor will introduce the student to VOR procedures in the training aircraft.

COMPLETION DETAILS

DATE_____ TIME SPENT_____ OUTCOME S N U I

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Tasks to Accomplish:

__ VOR tuning and identifying

__ VOR orientation, position, and station passage

__ VOR radial intercepting and tracking procedures / wind correction techniques

Aircraft Settings:

Cessna 172 on the ground at Clermont County Airport (I69).

Weather Settings:

Clear skies

Wind out of 090 – 11 knots

Wind layer at ~3000 feet

Gust out of 095 – 12 knots

Performance Goals:

At the completion of this lesson, the student will have a basic knowledge of VOR procedures. The student will maintain or roll out on assigned headings ±10 degrees, maintain or level off at assigned altitudes ±100', maintain airspeeds ±10 knots, and maintain turning angles of bank ±5 degrees. While tacking a specified VOR radial, the student will apply proper correction to maintain the radial, allowing no more than ¾ scale deflection on the CDI.

Scenario:

The student will begin the lesson at Clermont County Airport (I69).

- Prior to departing, perform an instrument flight deck check, confirming communication, navigation, and flight instruments are set.
- Depart runway 22 and climb to 3000 feet MSL with airpseed at pilot's discretion.
- Once through 2500, fly heading 190.
- Tune Falmouth VOR on frequency 117.0 and identify.
- Once verified, tune NAV 1 to 200 and fly a heading of 150 to intercept the radial.
- Upon interception, turn to heading 200 and fly towards the VOR.
- Factor in the quartering tailwind and fly wind correction angles as need.
- Approaching the VOR, pay attention to the increased sensitivity of the NAV 1 needle.
- Upon reaching the cone of confusion and flying over the VOR, fly heading 135 for 120 seconds.
- After 120 seconds of outbound flying, make a left turn to heading 300 and find the inbound radial to the VOR (~305).
- Upon crossing over the VOR, tune NAV 1 to 015 and track that radial back towards Clermont County Airport.
- When crossing over the river, about 15.5 miles from the FLM VOR, begin a descent down to pattern altitude for a normal approach to land on runway 22 to complete the lesson.

Additional Study:

Instrument Flying Handbook

Chapter 9 - *Navigation Systems*

Sporty's Flight Maneuvers Guide

Intercepting and Tracking Navigational Systems - VOR Radials

Sporty's Instrument Rating Course

Volume 1

Review segments as needed

Volume 3

Segment 3 - Flying the Localizer

Segment 8 - Flying VOR Approaches

Segment 9 - Closer Look: Procedure Turns

Notes:

IFR SESSION 15

This session will help you prepare for lesson 30 in Sporty's Instrument Rating TCO.

COMPLETION DETAILS

DATE_____ TIME SPENT_____ OUTCOME S N U I

DATE_____ TIME SPENT_____ OUTCOME S N U I

DATE_____ TIME SPENT_____ OUTCOME S N U I

DATE_____ TIME SPENT_____ OUTCOME S N U I

Objective:

During this lesson, the instructor will introduce the student to ILS, back course, and APV approach procedures in the training aircraft. Holding, VOR and GPS approaches, and missed approach procedures will be reviewed.

Tasks to Accomplish:

__ ILS approach

__ APV approach (LPV or LNAV/VNAV)

__ Missed approach procedures

__ Back course approach

__ Holding procedures

Weather Settings:

Barometric setting: 29.92

Overcast clouds:

- Coverage: 100
- Density: 5
- Scatter: 100
- Alt (top): 20000
- Alt (bottom): 1000

Performance Goals:

At the completion of this lesson, the student will be able to navigate, hold en route, and perform ILS and GPS approaches with minimal instructor assistances. The student will maintain headings ±10 degrees, maintain altitudes (other than flight at MDA or during the final approach segment of a precision approach) ±100', maintain airspeeds ±10 knots, and maintain turning angles of bank ±5 degrees. During nonprecision approaches the student will maintain the MDA +200/-0' to the MAP and allow no more than a ¾ scale deviation on the CDI while on the final approach segment.

***** It is highly recommended to use an EFB in tandem with this lesson*****

Relevant Charts:

KILN RNAV (GPS) RWY 22R Approach

KLUK ILS RWY 21L Approach

KLUK LOC BC RWY 3R Approach

Scenario:

We'll begin this lesson at Fayette County (I23) on runway 23

For this lesson, simulate making all radio calls as you would in the aircraft

- Prior to departing, perform an instrument flight deck check, confirming communication, navigation, and flight instruments are set.
- Set the flight plan within the GPS to indicate Direct To -> KILN.
- After runup and predeparture checks are made, depart runway 23 and climb to 3000 MSL, maintaining runway heading.
- Upon reaching 3000 MSL run a cruise check.
- After cruise check, choose the RNAV GPS RWY 22R approach at KILN via the ODORY initial approach fix and activate the approach.
- Fly the approach down to 1500' and execute a missed approach, maintaining runway heading and climbing to 3500.

(Continued on next page)

Scenario (continued):

- Upon reaching 3500, prepare to fly to KLUK for the ILS 21L approach.
- With a direct-to command for KLUK in the GPS and the LOC/DME tuned and verified for CDI #1, fly pilot's discretion heading to intercept the localizer prior to KUYEY.
- Upon passing KUYEY, descend to 2000' to intercept the glideslope at SIYOR.
- When glideslope is one dot above your path, reduce throttle to 1800 RPM. Confirm airspeed below 110 knots and add 10 degrees of flaps. Maintain a 500' per minute descent at 90 knots to stay on glideslope.
- Keep localizer and glideslope centered on CDI #1 until 900 MSL and execute the missed approach.
- Once stabilized in a hold at CALIF, prepare to fly the LOC BC RWY 3R approach back into Lunken.
- Depart the hold and fly pilot's discretion heading to intercept the localizer back course prior to SHILA.
- While on localizer back course, take note of the reversal in localizer indications from the previous approach.
- Fly the localizer back course down to minimums with a full stop landing on runway 3R at Lunken.

Additional Study:

Instrument Flying Handbook

Chapter 2 - *The Air Traffic Control System*

Chapter 9 - *Navigation Systems*

Chapter 10 - *IFR Flight*

Instrument Procedures Handbook

Chapter 4 - *Approaches*

Sporty's Instrument Rating Course

Volume 3

Segments 3-14

Volume 4

Segment 8 - Closer Look: Approach Lighting Systems

Segment 9 - Planning For The Approach

Sporty's Flight Maneuvers Guide

Approach Brief

Precision ILS Instrument Approach Procedure

RNAV (GPS) Approach - LNAV

RNAV (GPS) Approach - LPV

RNAV (GPS) Approach - LP

Landing from an Instrument Approach

Missed Approach Procedures - From a Straight-In Approach

Notes: