

INTRODUCTION

GENERAL

This publication consists of two parts. The student keeps Part 1, the reference manual. It contains general information, planned training hours, recommended publications, lesson summaries, study assignments, supplemental study guides, the numbers (numerical references for aviation regulations and procedures), notam and weather contractions, and written examinations.

The instructor keeps Part 2, the training syllabus, which contains the lessons. For liability protection, the instructor keeps Part 2 on file for three years after training has been completed or terminated.

Ground training is also required. For every hour you fly, three or four hours of studying is required. Your flight instructor will recommend specific material.

The pre- and postflight discussions for each lesson are a critical part of the training process. These sessions are logged as ground instruction. The amount required is directly related to your ability and desire to study. Your instructor will charge for both ground and flight instruction.

There is a significant difference between flight training and other types of training that you have received. At the completion of flight training, your flight instructor must certify that you are competent to exercise the privileges of the certificate or rating in question. Instructors will not jeopardize their standing with the FAA and certify you if there is any doubt about your knowledge, proficiency, or attitude.

SCHEDULED APPOINTMENTS

Your instructor will make every effort to ensure your success. In return, you are expected to be on time and be prepared for each lesson. If you must cancel a lesson, notify your instructor as soon as possible.

STUDENT PROBLEMS

If you feel incompatible with your flight instructor, stop flying and consult the school manager, another instructor, or an FAA designated pilot examiner. Changing instructors, however — the proper solution for personality conflicts — is not a guaranteed solution for lack of progress.

FLIGHT TRAINING SYLLABUS

The flight training syllabus consists of one or more stages of instruction that lead to a specific goal. Each stage consists of the lessons, a written examination, and a stage check.

Each lesson has a training objective, which may require two or more flights. You must establish the proper mental and physical habit patterns so that you can perform consistently in accordance with the applicable FAA requirements. The habit patterns required for flying are often contrary to those that you developed previously.

SUPPLEMENTAL STUDY GUIDE

This guide lists study elements for each stage of instruction. By combining theoretical knowledge with practical applications, learning and progress are enhanced.

Federal aviation regulations and the *Aeronautical Information Manual* contain considerable information, some of which is confusing or not applicable to this course. To save you time, the study guide lists the elements that you must know and summarizes those that cause confusion.

WRITTEN EXAMINATIONS

A written examination must be completed prior to the stage check. Your instructor will grade the examination, review the errors with you, and then schedule the stage check.

OPTIONAL LESSONS OR LESSON ELEMENTS

Lessons or lesson elements designated as *optional* are not required for course graduation or FAA certification, but are included for students who desire additional knowledge and proficiency.

CONDITIONAL LESSONS OR LESSON ELEMENTS

Lessons or lesson elements designated as *conditional* are required only if the airplane used for the FAA practical test will have specific equipment: TAA (technically advanced airplane), ADF, GPS, DME, or autopilot.

PREFLIGHT DISCUSSION

Your instructor will answer your questions, ask you questions based on your study assignments, and then discuss that lesson's elements of instruction.

POSTFLIGHT DISCUSSION

Your instructor will answer your questions, critique your performance, discuss plans for the next lesson, and issue study assignments.

STAGE CHECKS

Stage checks are extremely beneficial. During training with your primary instructor, you are subjected to considerable amounts of information, and the important elements often become diluted due to numerous, less-important elements.

Stage checks allow another instructor to review your knowledge and performance and place emphasis on the important elements of that stage. This gives you additional insights and self-confidence and acclimates you to the checkride process before you take your FAA checkride for pilot certification.

PLANNED TRAINING HOURS SUMMARY

The planned training times listed below are the average training times at a busy Los Angeles area airport that has a mix of airline and general aviation traffic in class-C airspace. Actual training time depends on airport location, airplane complexity, the instructor, training frequency (two or three times a week is optimum), and the student's background, age, motivation, and ability to study and retain information.

STAGE 1

Pre/postflight briefings - 7.0 hrs.
Flight Instruction:
ATD, IFR - 14.5 hrs.

STAGE 2

Pre/postflight briefings - 10.2 hrs.
Flight Instruction:
ATD, IFR - 6.5 hrs.
Airplane, day VFR - 1.3 hrs.
Airplane, IFR - 8.0 hrs.
Total - 15.8 hrs.

STAGE 3

Pre/postflight briefings - 4.4 hrs.
Flight Instruction:
Airplane, IFR - 16.0 hrs.

COURSE TOTALS*

Pre/postflight briefings - 21.6 hrs.
Flight Instruction:
ATD, IFR - 21.0 hrs.
Airplane, day VFR - 1.3 hrs.
Airplane, IFR - 24.0 hrs.
Total - 46.3 hrs.

* Does not include two conditional and one optional lesson:
ATD, conditional, IFR, ADF - 2.6 hrs.
Airplane, conditional, IFR, GPS - 5.2 hrs.
ATD, optional, IFR, cross-country - 1.3 hrs.

REQUIRED TRAINING HOURS

Federal aviation regulation list the required hours. These requirements have not changed for years, because they are mandated by ICAO (International Civil Aviation Organization). As a member of the UN, the United States is required to comply. However, for flight training in our country, many of those hours are grossly outdated. The FAA solved that problem by publishing their practical test standards so that training to proficiency is the key to success, not flight hours.

RECOMMENDED PUBLICATIONS

Required

(Note: Many government publications can be downloaded for free as PDF files from the FAA and AOPA websites.)

Instrument Pilot Flight Training Manual, Ralph Butcher, www.skyroamers.com.

Rod Machado's Instrument Pilot's Handbook (For Chapter 3 — A Plan for the Scan, refer to Skyroamers' manual.), www.rodmachado.com.

Federal aviation regulations: 14 CFR parts 1, 61, 91, and NTSB 830.

Instrument Rating Practical Test Standards, FAA.

Aeronautical Information Manual, FAA.

Airport/Facility Directory, FAA.

Aviation Weather, FAA, AC 00-6.

Aviation Weather Services, FAA, AC 00-45.

Risk Management Handbook, FAA-H-8083-2

Aeronautical Decision Making, AC 60-22.

Role of Preflight Preparation, AC 61-84.

General Aviation Controlled Flight into Terrain Awareness, AC 61-134.

Pilots' Role in Collision Avoidance, AC 90-48.

Part 91 and Part 135 Single-Pilot Procedures During Taxi Operations, AC 91-73.

Optional

Guidelines for Using Global Positioning System Equipment for IFR En Route and Terminal, AC 90-94

Aircraft Systems for Pilots, Dale De Remer.

Instrument Procedures Handbook, FAA-H-8261-1A.

Human Factors for General Aviation, Stanley R. Trollip and Richard S. Jensen, Jeppesen

FAR/AIM Manual, Jeppesen by subscription. Other FAR/AIM publications may be used if desired, but this manual, which contains many other useful references, is updated whenever changes occur.

Airway Manual, Jeppesen by subscription. NACO publications may be used if desired, but Jeppesen charts, used by all airlines and most charter companies, are better organized and easier to use.

Aircraft Owner's and Pilot's Association (AOPA) membership. Invaluable internet resources and AOPA Air Safety Foundation's (ASF) online courses, (800) 872-2672.

LESSON SUMMARIES WITH STUDY ASSIGNMENTS

Study assignments are listed with the lesson to which they apply. Complete these assignments before you start that lesson. Study assignments do not refer to the following lesson.

STAGE 1

Training objective: ATD — To develop the proper mental and physical habit patterns for instrument scanning and interpretation, aircraft control, VOR navigation, and holding patterns.

LESSON 1

ATD. Why we use ATDs; visual flight orientation; flight instrument responses to power and attitude changes; the graveyard spiral; the four step instrument scan; hands-off flight; boxing the attitude indicator in order to realize the importance of elevator-throttle coordination and the concept of attitude plus power equals performance; trimming; and the ATD's aerodynamic characteristics.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Introduction

Chapter 2: pp. 1 thru 24, Instrument Scanning. Memorize Skyroamers® Four Step Scan Procedure.

LESSON 2

ATD. Introduction to complex airplanes (optional); introduction to the power settings, airspeeds, and attitudes for the airplane's *gaits*; straight and level flight; level turns; turns to specific headings; constant airspeed climbs and descents; further development of "Attitude plus power equals performance," trimming, and the four step scan.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 2: review pp. 1 thru 24, Instrument Scanning. Memorize Skyroamers® Four Step Scan Procedure.

Chapter 3: pp. 5 thru 15, Introducing Instrument Flight, Gaits of Flight, Basic Maneuvers.

LESSON 3

ATD. Basic coordination maneuvers; constant airspeed, constant vertical speed climbs and descents; the Vertical-S; further development of "Attitude plus power equals performance," trimming, the four step scan, and elevator-throttle coordination.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 2: pp. 25 thru 29, Instrument Interpretation.

Chapter 3: pp. 15 thru 17, Basic Coordination Exercises; pg. 26, Climbs and Descents, Constant Rate.

LESSON 4

ATD. Flight control procedures for steep turns, stall recoveries, and recovery from unusual attitudes with and without the attitude indicator; the Vertical S-1; introduction to the Oscar Pattern; further development of the four step scan, instrument interpretation, and elevator-throttle coordination.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 2: pp. 29 thru 36, Aircraft Control, Aircraft Trimming, Control Summary.

Chapter 3: pg. 22 Steep Turns.

pp. 28 thru 32, Stalls, Recovery from Unusual Attitudes, Vertical-S, Vertical S-1.

LESSON 5

ATD. Oscar Pattern with and without the attitude indicator; VOR orientation, course intercepts and tracking; further development of the four step scan, instrument interpretation, and elevator-throttle coordination.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 3: pp. 32 thru 36, Oscar Pattern.

Chapter 4: pp. 2 thru 8, VOR Orientation thru VOR Operating Rules Summarized (Ignore ADF); pp. 13 thru 28, Combined VOR and ADF (ignore ADF) Operating Rules thru Tracking.

LESSON 6

ATD. Oscar Pattern with and without the attitude indicator; VOR station and intersection holding; use of the 5 T's checklist; further development of the four step scan, instrument interpretation, and elevator-throttle coordination.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 5: pp. 1 thru 28, Radio Navigation: Holding Patterns.

Note: When I wrote my instrument manual, holding pattern entries had to be within five degrees of the correct entry. Fortunately, that rule was eliminated in favor of common sense, and holding has become simplified. Your first requirement is to visualize the holding pattern — the race track pattern, not the entry maneuver — on the heading indicator. Second, after you are flying toward the holding fix, determine the entry procedure by asking yourself, "What is the easiest way to enter the holding pattern after I cross the holding fix?"

LESSON 7

ATD. Stage check.

STAGE 2

Training Objective: ATD — Instrument approaches, and en route flying. Airplane — Instrument scanning, interpretation, and aircraft control; airwork, radio navigation, holding patterns, and instrument approaches and missed approaches.

LESSON 1

Briefing room. Reading IFR aeronautical charts, organizing charts for cockpit use, and runway incursion avoidance.

Study assignment:

Airway Manual (Jeppesen charts):

Review the Introduction section.

The Aeronautical Chart Users Guide (NACO charts)

LESSON 2

ATD. VOR approaches and missed approaches to circling and straight-in minimums; localizer and localizer back course approaches; procedure turns and holding.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 6: pp. 8 thru 32, Procedure Turns, Approaches in General, Non-Precision Approaches.

LESSON 2A - Conditional for ADF

ATD. NDB orientation, course intercepts and tracking, approaches and missed approaches.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 4: pp. 8 thru 28, ADF Orientation, Tracking.

Chapter 5: pp. 5 thru 8, Timing.

LESSON 3

ATD. Instrument takeoffs and initial climb profile; ILS approaches and missed approaches.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 3: pp. 23 thru 26, Instrument Takeoff, Departure Profile.

Chapter 6: pp. 33 thru 45, Precision Approaches.

LESSON 4

ATD. Single-VOR instrument flight when not in radar contact; use of the mental checklists and navigation rules; communications; wind compensation; intersection and VOR holding; attitude indicator failure; VOR, LOC, or ILS instrument approaches; missed approach with hold.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 7: pg. 22 thru 36, Mental Checklists, Mental Navigation Rules, and Communications.

Memorize the following mental checklists: Cigars; Lights, Camera, Action; The Five T's; The Big Seven; and Gumps.

Memorize the following Mental Navigation Rules: Reciprocals, Distance Time Conversions, True Airspeed.

Memorize the Required Air Traffic Control Reports. pg. 37 in this manual.

LESSON 5

ATD. Dual-VOR instrument flight when in radar contact; use of the mental checklists and navigation rules; communications; lost communications procedures; wind compensation; intersection and VOR holding; attitude indicator failure; instrument approach and missed approach; no-gyro approach.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 7: pp. 1 thru 21, Cross-Country Flying, Headwork.

LESSON 6

Airplane, VFR. To ensure VFR currency in the airplane that is to be used for instrument training; the circle-to-land procedure during circling approaches; the transition from the approach configuration to the landing configuration during straight-in approaches.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 3: pp. 1 thru 5, Visual Flying.

Airplane's flight manual/pilot's operating handbook

LESSON 7

Airplane, IFR. Familiarization with airplane during IFR flight; basic airwork and coordination exercises; timed turns; turns to headings using the magnetic compass.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 3: pp. 18 thru 22, Magnetic Compass Turns to Specific Headings.

Chapter 7: pp. 37 thru 47, Advanced Concepts, if applicable.

LESSON 8

Airplane, IFR. Stalls; acceleration and deceleration at constant altitude; steep turns; recovery from unusual attitudes. constant airspeed, constant vertical speed climbs and descents; the Oscar Pattern.

Study assignment:

Instrument Pilot Flight Training Manual (Butcher):

Chapter 1: pp. 1 thru 38, Standard Operating Procedures.

LESSON 9 - Conditional for GPS

ATD or airplane, IFR. Use of GPS and autopilot for navigation, instrument approaches, and missed approaches.

Study assignment:

Pilot's operating manual for the GPS receiver.

LESSON 10

Airplane, IFR. Terminal navigation: position and course orientation, course intercepts and tracking, holding, instrument approaches and missed approaches.

Study assignment:

Stage 1, Supplemental Study Guide, in this manual.

LESSON 9

Airplane, IFR. Stage check.

STAGE 3

Training Objective: Airplane — Instrument en route (cross-country) flying and final review for instrument rating certification.

LESSON 1

Airplane, IFR. En route instrument flight, initial.

Study assignment:

Stage 2, Supplemental Study Guide, in this manual.

LESSON 2

Airplane, IFR. En route instrument flight, second.

Study assignment:

Stage 3, Supplemental Study Guide, in this manual.

LESSON 3

Airplane, IFR. Selected en route instrument flights to airports in the local area in order to reach final en route proficiency.

Study assignment:

As assigned by instructor.

LESSON 4 - Optional for proficiency

ATD. En route instrument flight to destination and alternate airports with irregular and emergency procedures.

Study assignment:

As assigned by instructor.

LESSON 5

Airplane, IFR. The FAA required 250 mile, IFR cross-country flight.

Study assignment:

As assigned by instructor.

LESSON 6

Airplane, IFR. Review of instrument flight maneuvers, holding, and approaches.

Study assignment:

As assigned by instructor.

LESSON 7

Airplane, IFR. Stage check.