Instrument Rating Airplane Ground Training Rev. 07/93

Instrument Rating Ground School Schedule

Class 3 Nights Per week, 3 hours per class Monday, Tuesday & Weekday Nights 6:00pm - 9:00pm

Total Class Time - 48 Hours Tuition - $250.00 Plus books

DATE		SUBJECT
Monday	Class #1	Introduction & Overview of course
		Flight Instrument Systems
Tuesday	Class #2	Attitude Instrument Flying
		Instrument Navigation
Wednesday	Class #3	Federal Aviation Regulations Pertaining To IFR Operations
Monday	Class #4	ATC Systems & Clearances
		Airports, Airspace & Flight Info
Tuesday	Class #5	Instrument Navigation
		Instrument Approach Charts
Wednesday 18H	Class #6	Stage I Exam & Review
Monday	Class #7	ILS Approach Procedures
		VOR Approach Procedures
		NDB Approaches
Tuesday	Class #8	Departure Procedures
		Enroute Procedures

DATE		SUBJECT
Wednesday	Class #9	Arrival Procedures & Approaches
Monday 30H	Class #10	STAGE II Exam & Review
Tuesday	Class #11	Weather Factors Weather Hazards
Wednesday	Class #12	Weather Reports & Forecasts Graphic Weather Products High Altitude Considerations
Monday	Class #13	STAGE III Exam & Review
Tuesday	Class #14	Review
Wednesday	Class #15	Final Stage Exam & Review
Monday 48H	Class #16	Review Of Least Understood areas
Tuesday	Class #17	FAA Written Test (Exam Fee)

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48 Hours
Stage I Lessons 1 - 6: 18 Hours
Stage II Lessons 7 -10: 12 Hours
Stage III Lessons 11-16: 18 Hours

PURPOSE: This curriculum provides a detailed summary of specific actions to be taken during periods of ground instruction. It's purpose is to prepare students for FAA written examinations. This instrument ground school will: prepare: 1- Student, private or commercial pilots for an FAA exam in conjunction with the instrument airplane rating; 2- Flight instructors who wish to study for an instrument instructor rating; and, 3- Aviators who wish to increase their knowledge of instrument flight. It is designed to ensure that the specific areas of knowledge contained in FAR 61.65 are learned.

OBJECTIVE: The student will obtain the necessary aeronautical knowledge and meet the prerequisites specified in Part 61 of FAR's for the instrument rating written test.

COMPLETION STANDARDS: You will demonstrate, through oral questioning and written tests that you meet the prerequisites specified in Part 61 of the FAR's, and have the knowledge necessary to pass the written test.

Recommended texts for use with this ground training syllabus are:
a. The Pilot's Handbook Of Aeronautical Knowledge.
b. AC 61-21A Flight Training Handbook
c. FAA-T-8080-20 Instrument Rating Question Book
d. AC 00-6A Aviation Weather, AC 00-45 Aviation Weather Services.
e. IFR Exam-O-Grams
f. Airman's Information Manual
g. Federal Aviation Regulations

The contents of this checklist parallels the subject areas in the Instrument Rating Question Book, (FAA-T-8080-20

STAGE ONE--LESSONS 1 - 6: 18 HOURS.
STAGE ONE OBJECTIVE: Students will learn about the principles of instrument flight, including the use and limitations of flight instruments and instrument navigation systems, ATC systems and clearances, airports, airspace, flight information and instrument approach charts.
STAGE ONE COMPLETION STANDARDS: This stage will be successfully completed when the you pass the Stage I Written Exam with a minimum passing score of at least 75%, and has participated in the Stage I Written Exam review of incorrect responses before progressing.

Lesson #1. 3 Hours.

OBJECTIVE: You will be introduced to this course of instruction, and to aircraft flight instruments and instrument systems. In addition, attitude instrument flying will be introduced.

CONTENTS:

Airspeed Definitions

Mach Number

Altitude Definitions, Altimeter Settings, Altimeter Errors

Vertical Speed Indicator

Instrument Errors

Magnetic Compass

Gyroscopic Flight Instruments and Systems

Attitude Indicator

Rate Of Turn Indicator

Turn Coordinator

Heading Indicator

Slaved Gyro

Gyroscopic Failures

Attitude Instrument Flying

Fundamental Skills

Unusual Attitude Recoveries

COMPLETION STANDARDS: You will have successfully completed this lesson when, by oral questioning, you display a working knowledge of the various aircraft flight instruments and instrument systems, and how they relate to aircraft performance.

Lesson #2. 3 Hours.

OBJECTIVE: During this lesson you will review the previous lesson as necessary, and be introduced to various instrument navigation systems, and their respective flight instruments.
CONTENTS:

Review Previous Subjects as Necessary

Equipment Requirements

Equipment Inspections

VOR-VHF Omni Range Facilities (Checkpoints, Errors, Identifiers, DME)

Vor Indicator (Sensitivity, Deflection Scale, Aircraft Displacement 200' per dot per NM)

Classes of Navaids

Airborne Omni Display

VOR Orientation, HSI Orientation

VOR Accuracy Checks

A/FD Notations

Station Passage

HSI/VOR Orientation VOR & LOC Course, Glide Slope Indications

Fixed Card ADF Indications (RB, MH, MB)

Movable Card ADF Indications (RB, MH, MB)

Radio Magnetic Indicator & Orientation

COMPLETION STANDARDS: You will have successfully completed this lesson when, by oral questioning, a working knowledge of instrument navigation systems and flight instruments is displayed.

Lesson #3. 3 Hours.

OBJECTIVE: During this lesson, you will review the previous lesson as necessary, and be given instruction in the various instruments and systems pertaining to IFR flight, and be introduced to specific Federal Aviation Regulations that pertain to the IFR flight environment.

CONTENTS:

Review Previous Subjects as Necessary

Instrument Landing System (ILS), Marker Beacons, Compass Locator, (LOM)

ILS Component Identifiers (VOR Identifiers)

DME Arcs

SDF, RNAV, LORAN (AFM Supplement)

Recent Flight Experience, Recent IFR Experience (FAR 61.57)

Pilot Logbooks (FAR 61.51)

ATC Clearance & Flight Plan (FAR 91.173)

Controlled Airspace (PCA, TCA 91.215, 91.131; ARSA Dimensions; CZ, TA, CA, ATA)

Uncontrolled Airspace

Special Use Airspace (Prohibited, Restricted, Warning, MOA, Alert)

Speed Limits

Oxygen

Spatial Disorientation

Collision Avoidance Scanning

Preflight (FAR 91.103)

NOTAMS

IFR Flight Plan (Type, Equipment, Departure Airport Code & SID,
UTC A/FD Legend; Initial Altitude, Route, Destination, ETE, Remarks, Useable Fuel FAR 91.167; Alternate FAR 91.169)

COMPLETION STANDARDS: This lesson will have successfully completed when you can discuss the elements of basic instrument navigation, and the various Federal Aviation Regulations pertaining to instrument flight situations.

Lesson #4. 3 Hours.

OBJECTIVE: During this lesson, you will review the previous lesson as necessary, and be given instruction in the various ATC systems and ATC clearances for departure and enroute segments of the flight.

CONTENTS:

Review Previous Subjects as Necessary

IFR Clearance

Cruise Clearance

VFR-On-Top

SID

FPM Climbs

Departure Routes

RMI Orientation (2315, 2363)

Minimum IFR Altitudes (91.177)

IFR Climb and Descent (AIM 4-89)

Adherence To Clearance (FAR 91.123)

Communications Reports (91.183)

COMPLETION STANDARDS: This lesson will have been successfully completed when, by oral questioning, you have knowledge of ATC systems and ATC clearances and the Airspace, Airports and Flight Information concerning the National Airspace System.

Lesson #5. 3 Hours.

OBJECTIVE: During this lesson, you will review the previous lesson as necessary, and be given continued instruction in knowledge of ATC systems, clearances and the Airspace, Airports and the National Airspace System. Additionally, instruction on the Instrument Navigation and Approach Procedures pertaining to the Arrival and Approach segments of the IFR flight will be introduced, and you will be introduced to the En-Route Low Altitude Charts.

CONTENTS:

Review Previous Subjects as Necessary

Inoperative Components

VASI, PAPI

Runway Markings

Rotating Beacon

Wake Turbulence

Radar Service Advisories, Weather Advisories, Resume Own Navigation

Canceling IFR

En-Route Chart Symbols (A/FD Chart Selection, Loc, Loc/ATC Function, MEA MRA, MOCA, MCA, MAA, VHF Frequencies, COP's, Chart Position Orientation)

COMPLETION STANDARDS: This lesson will have been successfully completed when by oral questioning, you can discuss ATC systems and clearances, Airspace, Airports and the National Airspace System, Instrument Navigation and Approach Procedures, and the En-Route Low Altitude Charts.

Lesson #6. 3 Hours.

OBJECTIVE: During this lesson, you will be given the Instrument Stage I Exam and review. The review portion of this lesson will enable you to determine the areas of knowledge that require additional study.

INSTRUCTIONS:
For each numbered item, select the corresponding question number from your written test book, and mark the correct answer choice on your answer sheet. (You may make marks or write on this page.)

1	2003
2	2008
3	2012
4	2014
5	2025
6	2031
7	2032
8	2033
9	2038
10	2044
11	2047
12	2053
13	2054
14	2056
15	2069
16	2072
17	2076
18	2085
19	2089
20	2269
21	2271
22	2272
23	2275
24	2278
25	2312
26	2331
27	2353
28	2355
29	2372
30	2396
31	2399
32	2406
33	2410
34	2412
35	2418
36	2421
37	2426
38	2445
39	2458
40	2459
41	2468
42	2470
43	2473
44	2483
45	2528
46	2537
47	2550
48	2559
49	2569
50	2586
51	2587
52	2594
53	2638
54	2640
55	2665
56	2703
57	2705
58	2708
59	2731
60	2734
61	2748
62	2753
63	2759
64	2773
65	2776
66	2787
67	2798
68	2803
69	2814
70	2820
71	2829
72	2830
73	2840
74	2867
75	2939

STAGE TWO--Lessons 7 - 10. 12 Hours.
STAGE TWO OBJECTIVE: To develop your knowledge of ILS, NDB, and VOR approach procedures, and of departure, enroute and arrival procedures.
STAGE TWO COMPLETION STANDARDS: This stage will be successfully completed when the you pass the Stage II Written Exam with a minimum passing score of at least 75%, and has participated in the Stage II Written Exam review of incorrect responses before progressing.

Lesson #7. 3 Hours.

OBJECTIVE: During this lesson, you will review the previous lesson as necessary, and be instructed in instrument clearances and ILS, VOR and NDB approach procedures.

CONTENTS:

Review Previous Subjects as Necessary

Instrument Approach Terms and Abbreviations

Instrument Approach Procedure Charts

Radar Approaches

Missed Approach

Runway Visual Range Definition 2401

RVR Comparable Values

Inoperative Components

ILS Approach Plates

VOR Approach Plates

NDB Approach Plates

COMPLETION STANDARDS: This lesson will have been successfully completed when through oral questioning, you can demonstrate a working knowledge and understanding of instrument clearances and ILS, VOR and NDB approach procedures.

Lesson #8. 3 Hours.

OBJECTIVE: During this lesson, you will review the previous lesson as necessary, and be instructed in enroute and holding procedures, holding pattern entries and procedures for timed approaches.

CONTENTS:

Review Previous Subjects as Necessary

Visual and Contact Approaches

Reporting Speed Variations

Holding Clearance

Holding Procedures

Timed Approached From A Holding Fix 2628

ATC Communications During Arrival

Communications Failure

COMPLETION STANDARDS: This lesson will have been successfully completed when, through oral questioning, you can demonstrate a working knowledge of enroute and holding procedures, holding pattern entries and procedures for timed approaches.

Lesson #9. 3 Hours

OBJECTIVE: During this lesson, you will review the previous lesson as necessary, and be instructed in the planning and computations of groundspeeds, distances and elapsed times, particular routes of flight.
CONTENTS:

Review Previous Subjects as Necessary

Courses and Headings Computations

Wind Correction Angle and Groundspeed

Quantities of Time, Speed and Distance

COMPLETION STANDARDS: This lesson will have been successfully completed when, through oral questioning, you can demonstrate a working knowledge of planning and computations of groundspeeds, distances and elapsed times, particular routes of flight.

Lesson #10. 3 Hours.

OBJECTIVE: During this lesson, you will be given the Instrument Stage II Written Exam and review. The review portion of this lesson will enable you to determine the areas of knowledge that require additional study.

INSTRUCTIONS:
For each numbered item, select the corresponding question number from your written test book, and mark the correct answer choice on your answer sheet. (You may make marks or write on this page.)

1	2006	50	2672
2	2048	51	2699
3	2050	52	2701
4	2051	53	2711
5	2052	54	2714
6	2061	55	2718
7	2071	56	2749
8	2073	57	2757
9	2074	58	2767
10	2075	59	2770
11	2078	60	2797
12	2079	61	2881
13	2086	62	2942
14	2282		
15	2287		
16	2296		
17	2297		
18	2298		
19	2304		
20	2305		
21	2335		
22	2336		
23	2354		
24	2370		
25	2394		
26	2395		
27	2401		
28	2404		
29	2408		
30	2409		
31	2420		
32	2433		
33	2437		
34	2443		
35	2462		
36	2468		
37	2490		
38	2497		
39	2523		
40	2540		
41	2555		
42	2558		
43	2612		
44	2618		
45	2624		
46	2629		
47	2655		
48	2667		
49	2669		

STAGE THREE--Lessons 11 - 16. 18 Hours.
STAGE THREE OBJECTIVE: To develop your knowledge of Weather Factors, Weather Theory, IFR Flight Planning and Emergency Procedures.
STAGE THREE COMPLETION STANDARD: This stage will be successfully completed when the student passes the stage three written exam with a score of at least 75%

Lesson #11. 3 Hours.

OBJECTIVE: During this lesson, you will review the previous lesson as necessary, and be instructed in Weather Factors and weather theory pertaining to IFR Flight.

CONTENTS:

Review Previous Subjects as Necessary

Basic Atmospheric Circulation

The Heating of the Earth

The Rotation of the Earth

Circulation and Wind

Jet Stream

Temperature

Moisture

Air Masses and Fronts

Stability of the Atmosphere

Clouds

Cloud Families

Flying Hazards Associated with Turbulence

Turbulence Reporting Criteria

Thunderstorms

Wind Shear

Loss Of Tailwind, Loss Of Headwind

Icing

Fog

Frost

Microburst

COMPLETION STANDARDS: This lesson will have been completed when, through oral questioning, you demonstrate a working knowledge of Weather Theory and it's practical application to IFR flight in an airplane.

Lesson #12. 3 Hours.

OBJECTIVE: During this lesson, you will review the previous lesson as necessary, and be instructed in Weather Reports, Forecasts and other weather data pertinent to IFR flight.

CONTENTS:

Review Previous Subjects as Necessary

Surface Aviation Weather Report (SA, RS, SP)

Pilot Weather Reports (Pireps)

Terminal Forecasts (FT)

Area Forecasts (FA)

Wind and Temperatures Aloft Forecasts (FD)

Convective Outlook (AC)

Surface Analysis Chart

Weather Depiction Chart

Radar Summary Chart

Constant Pressure Charts

Observed Wind Aloft Chart

Tropopause Data Chart

Tropopause Height/Vertical Wind Shear Prognostic Chart

Low-Level Significant Weather Prognostic Chart

High-Level Significant Weather Prognostic Chart

Severe Weather Outlook Chart

In-Flight Weather Advisories (WA, WS, WST)

Transcribed Weather Broadcast (TWEB)

En Route Flight Advisory Service (EFAS)

COMPLETION STANDARDS: This lesson will have been successfully completed when, through oral questioning, you display a working knowledge of Weather Reports, Forecasts and other Weather Information Pertaining to Aircraft Flight in IFR weather conditions.

Lesson #13. 3 Hours.

OBJECTIVE: During this lesson, you will be given the Instrument Stage III Written Exam and review. The review portion of this lesson will enable you to determine the areas of knowledge that require additional study in preparation for the FAA Written Exam.

For each numbered item, select the corresponding question number from your written test book, and mark the correct answer choice on your answer sheet.

1	2094	50	2526
2	2095	51	2544
3	2096	52	2611
4	2097	53	2631
5	2101	54	2634
6	2102	55	2720
7	2107	56	2745
8	2111	57	2764
9	2119	58	2793
10	2120	59	2847
11	2121	60	2870
12	2123	61	2877
13	2129	62	2880
14	2132	63	2885
15	2133	64	2902
16	2139	65	2907
17	2151	66	2908
18	2153	67	2927
19	2156		
20	2158		
21	2160		
22	2174		
23	2178		
24	2180		
25	2182		
26	2184		
27	2185		
28	2190		
29	2194		
30	2195		
31	2201		
32	2207		
33	2209		
34	2211		
35	2223		
36	2226		
37	2228		
38	2240		
39	2244		
40	2245		
41	2249		
42	2256		
43	2332		
44	2432		
45	2451		
46	2455		
47	2504		
48	2505		
49	2515		

Lesson #14. 3 Hours.

OBJECTIVE: During this lesson, you will review the previous lessons as necessary, and be instructed in areas of knowledge which you need.

CONTENTS:

Review Previous Subjects as Necessary

Review of all previous lessons.

COMPLETION STANDARDS: This lesson will have been successfully completed when, through oral questioning, you display a working knowledge of those areas which were not clear from the beginning.

Lesson #15. 3 Hours.

OBJECTIVE: During this lesson, you will be given the Final Instrument Stage Exam and review. The review portion of this lesson will enable you to determine the areas of knowledge that require additional study in preparation for the FAA Written Exam.

For each numbered item, select the corresponding question number from your written test book, and mark the correct answer choice on your answer sheet.

1	2005	52	2570
2	2020	53	2593
3	2048	54	2603
4	2055	55	2625
5	2067	56	2641
6	2083	57	2687
7	2100	58	2702
8	2103	59	2709
9	2099	60	2716
10	2105	61	2727
11	2116	62	2760
12	2122	63	2763
13	2135	64	2778
14	2136	65	2807
15	2148	66	2875
16	2169	67	2867
17	2170	68	2887
18	2175	69	2916
19	2192	70	2917
20	2202	71	2943
21	2205		
22	2217		
23	2230		
24	2238		
25	2251		
26	2258		
27	2299		
28	2300		
29	2303		
30	2315		
31	2323		
32	2324		
33	2347		
34	2351		
35	2356		
36	2363		
37	2389		
38	2392		
39	2400		
40	2405		
41	2424		
42	2434		
43	2442		
44	2463		
45	2465		
46	2484		
47	2494		
48	2519		
49	2532		
50	2536		
51	2545		

Lesson #16. 3 Hours.

OBJECTIVE: During this lesson, you will review the previous lessons as necessary, and be instructed in areas of knowledge which you need.

CONTENTS:

Review Previous Subjects as Necessary

Review of Least Understood Areas

COMPLETION STANDARDS: This lesson will have been successfully completed when, through oral questioning, you display a working knowledge of those areas which were not clear from the beginning.