

COMMERCIAL PILOT Syllabus

*Complies with Part 61 & Part 141
training requirements for
single and multi-engine.*



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SIXTH
EDITION

COMMERCIAL PILOT Syllabus

by
Irvin N. Gleim, Ph.D., CFII
and
Garrett W. Gleim, CFII

ABOUT THE AUTHORS

Irvin N. Gleim earned his private pilot certificate in 1965 from the Institute of Aviation at the University of Illinois, where he subsequently received his Ph.D. He is a commercial pilot and flight instructor (instrument) with multi-engine and seaplane ratings and is a member of the Aircraft Owners and Pilots Association, American Bonanza Society, Civil Air Patrol, Experimental Aircraft Association, National Association of Flight Instructors, and Seaplane Pilots Association. Dr. Gleim is the author of flight maneuvers and practical test prep books for the sport, private, instrument, commercial, and flight instructor certificates/ratings and is the author of study guides for the remote, sport, private/recreational, instrument, commercial, flight/ground instructor, fundamentals of instructing, airline transport pilot, and flight engineer FAA knowledge tests. Three additional pilot training books are *Pilot Handbook*, *Aviation Weather and Weather Services*, and *FAR/AIM*.

Dr. Gleim has also written articles for professional accounting and business law journals, and is the author of widely used review manuals for the CIA (Certified Internal Auditor) exam, the CMA (Certified Management Accountant) exam, the CPA (Certified Public Accountant) exam, and the EA (IRS Enrolled Agent) exam. He is Professor Emeritus, Fisher School of Accounting, University of Florida, and is a CFM, CIA, CMA, and CPA.

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HELP!!

This is one book in a flight training series of seven books, designed specifically for persons who aspire to earn a commercial pilot certificate. These seven books are *Commercial Pilot Syllabus*, *Commercial Pilot Flight Maneuvers and Practical Test Prep*, *Commercial Pilot FAA Knowledge Test Prep*, *Commercial Pilot ACS and Oral Exam Guide*, *Aviation Weather and Weather Services*, *Pilot Handbook*, and *FAR/AIM*.

Please submit any corrections and suggestions for subsequent editions to the authors at www.GleimAviation.com/Questions.

Also, please bring this book to the attention of flight instructors, fixed-base operators, and others interested in flying. Wide distribution of this series of books and increased interest in flying depend on your assistance and good word. Thank you.

Environmental Statement -- This book is printed on high-quality, environmentally friendly groundwood paper, sourced from certified sustainable forests and produced either TCF (totally chlorine-free) or ECF (elementally chlorine-free). Our recyclable paper is more porous than coated paper, so we recommend marking it with a non-bleed-through highlighter.



If necessary, we will develop an UPDATE for *Commercial Pilot Syllabus*. Visit our website or email update@gleim.com for the latest updates. Updates for this edition will be available until the next edition is published. To continue providing our customers with first-rate service, we request that technical questions about our materials be sent to us via www.GleimAviation.com/Questions. We will give each question thorough consideration and a prompt response. Questions concerning orders, prices, shipments, or payments will be handled via telephone by our competent and courteous customer service staff.

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<i>IF FOUND, PLEASE CONTACT</i>	
Pilot Name	_____
Address	_____

Telephone #	_____
Email	_____

PREFACE

Thank you for choosing Gleim. Our training materials (books, software, and online) are intuitively appealing and thus very effective in transferring knowledge to you. The Gleim system saves you time, money, and frustration vs. other aviation training programs.

This syllabus will facilitate your studies and training for your commercial pilot certificate and, optionally, for your multi-engine rating as well.

1. Please read the following Introduction carefully.
2. The “Lesson Sequence and Times” section shows ground lessons being completed as you complete flight lessons. We encourage you to work ahead in your ground lessons and begin them (and even complete them) prior to beginning your flight training.
3. The **objective** is to develop “ACS level” proficiency as quickly as possible. “ACS level” means that you can perform at the level required by the FAA’s Airman Certification Standards (ACS).
4. Homework consists of reading and/or studying your Gleim **Commercial Pilot FAA Knowledge Test Prep** book, Gleim **Commercial Pilot Flight Maneuvers and Practical Test Prep** book, Gleim **Pilot Handbook**, Gleim **Aviation Weather and Weather Services** book, Gleim **FAR/AIM** book, and the Pilot’s Operating Handbook or Operating Limitations for your airplane. Each flight lesson also directs you to review topics and material studied for previous lessons.
 - a. The Commercial Pilot Kit does not contain **Pilot Handbook** or **FAR/AIM** since these books were included in the Gleim Private Pilot Kit. Additionally, **Aviation Weather and Weather Services** is not included in the Commercial Pilot Kit since this book was included in the Gleim Instrument Pilot Kit. If you do not have them, please order your copies today.
 - b. Further, the online Multi-Engine Add-On Rating Course, used as ground lessons in Part II of this syllabus, is not included with the Commercial Pilot Kit since pilots will pursue the training after their initial commercial certification is complete. Pilots who want to pursue multi-engine certification can purchase the online course when their training actually begins.

Why is the GLEIM SYSTEM different? It focuses on successful completion, as quickly and as easily as possible. The requirements for earning your commercial pilot certificate (single-engine-land) are listed beginning on page 2. Requirements for the multi-engine add-on rating can be found on page 3. This syllabus facilitates your flight training so you achieve an “ACS level” of proficiency on the 44 FAA tasks required for initial commercial pilot certification as well as the 24 tasks required as part of the multi-engine add-on as quickly as possible!

GO FOR IT! Start studying for your FAA knowledge test today. Refer to **Commercial Pilot FAA Knowledge Test Prep** and associated textbooks. Start studying for your FAA practical test by reading **Commercial Pilot Flight Maneuvers and Practical Test Prep**.

We have an easy-to-follow and easy-to-complete study system. From the very start, we want you to focus on success. This means answering over 80% of the FAA knowledge test questions correctly AND being able to explain and demonstrate all appropriate FAA practical test tasks to your CFI at “ACS level” proficiency for airplane single-engine land.

Enjoy Flying Safely!

Irvin N. Gleim
Garrett W. Gleim

January 2018

INTRODUCTION

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This syllabus is a step-by-step lesson plan for your commercial pilot training. It is intended to be used in conjunction with the following six Gleim books:

Commercial Pilot FAA Knowledge Test Prep
Commercial Pilot Flight Maneuvers and Practical Test Prep
Commercial Pilot ACS and Oral Exam Guide
Aviation Weather and Weather Services
Pilot Handbook
FAR/AIM

Your flight instructor (or flight school) will retain a record of your progress through each lesson in this book using the Commercial Pilot Training Record, included in pilot kits or sold separately and discussed in greater detail on pages 4 and 5.

WHAT ELSE DO YOU NEED?

If you purchased this syllabus as part of the Gleim **Commercial Pilot Kit**, you will need to purchase a local sectional chart and a Chart Supplement appropriate to your region. They are published every 6 months and 56 days, respectively. You will need a current copy of each for your FAA practical test. Gleim does not include these publications in your kit because there are 37 different sectional charts and seven different Chart Supplements for the conterminous U.S.

Additionally, you will need to purchase a copy of the Pilot's Operating Handbook and/or Airplane Flight Manual (POH/AFM) (or a Pilot Information Manual) for the make and model of your training airplane. Alternatively, you may make a photocopy if a POH/AFM is not available for purchase.

REQUIREMENTS FOR A COMMERCIAL PILOT CERTIFICATE – SINGLE-ENGINE LAND

You must meet a number of requirements to earn your commercial pilot certificate. The final step is your FAA practical test, which will be conducted by an appropriate evaluator. Your practical test will consist of an approximately 1- to 2-hour oral exam followed by a 1- to 2-hour flight test. You will be well prepared for your practical test by your CFI and your Gleim pilot training materials. In addition, you must meet the following requirements:

1. Be at least 18 years of age and hold at least a private pilot certificate with an airplane category rating and single-engine class rating.
2. Be able to read, write, understand, and converse fluently in English (certificates with operating limitations may be available for medical-related deficiencies).
3. Hold a current FAA medical certificate.
 - a. Your medical exam will be conducted by an FAA-designated aviation medical examiner (AME).
 - b. Ask your CFI or call your local flight school for the names and telephone numbers of the AMEs in your area, or visit www.faa.gov/pilots/amelocator for a listing of AMEs by country, county, city, zip code, or last name.
 - c. Use the FAA's MedXPress system to digitally fill out and submit your medical application before arriving at your appointment with the AME.
 - 1) Access MedXPress at <https://medxpress.faa.gov>.
 - d. Information entered into MedXPress will be available to your AME for review at the time of your examination.
 - 1) Make sure that you bring your confirmation number to your appointment, so your AME can access your application.
4. Pass your FAA commercial pilot (airplane) airman knowledge test, which consists of 100 multiple-choice questions administered at an FAA-designated computer testing center. Everything you need to prepare for your FAA commercial pilot (airplane) airman knowledge test is in your Gleim **Commercial Pilot FAA Knowledge Test Prep, Commercial Pilot Flight Maneuvers and Practical Test Prep, FAR/AIM, Pilot Handbook, and Aviation Weather and Weather Services** books. Gleim **FAA Test Prep Online** will facilitate your study. (To find out exactly what to expect from the computer testing center of your choice, use the **FAA Test Prep Online's** convenient vendor emulation testing format.) You may also use our convenient **Online Ground School** program to prepare for the knowledge test. Successful completion of the course will provide you with a knowledge test endorsement, which you will need to actually sit for the exam.
 - a. We have estimated 35 hours for complete preparation for your commercial pilot airman knowledge test. See "Commercial Pilot Syllabus Lesson Sequence and Times."
 - b. The further you study for your FAA commercial pilot airman knowledge test before you commence your flight lessons, the better!
 - 1) Under Part 141, you should be enrolled in the school's commercial pilot certification course before beginning your study program.
5. Undertake flight training as described in Part I, Lessons 1 through 60. Many of the lessons may require more than one flight to complete. We also have provided space for your instructor to record extra flights within each lesson as needed to make you comfortable and proficient.

6. PASS your FAA practical test. See Study Unit 2 in ***Commercial Pilot Flight Maneuvers and Practical Test Prep***.
 - a. It's fun to be successful! Be overly prepared before you get to the airport for each flight lesson.



The KEY TO SUCCESS in your flight training, which also minimizes cost and frustration, is your study and preparation at home before flying with your flight instructor. The more you know about flying, flight training, and each flight lesson, the better you will do.

For additional detail regarding FAA commercial pilot requirements, see the introduction in the ***Commercial Pilot FAA Knowledge Test Prep*** book.

REQUIREMENTS FOR A MULTI-ENGINE ADD-ON RATING FOR COMMERCIAL PILOTS

The vast majority of multi-engine pilots do not accomplish their initial pilot certification in a multi-engine airplane, but rather add the multi-engine rating onto their existing pilot certificate. The requirements below explain how a certificated commercial pilot would go about adding multi-engine privileges to his or her pilot certificate.

1. Hold a current and valid commercial pilot certificate as well as a current and valid FAA medical certificate.
2. Complete the ground and flight training specified in Part II of this syllabus.
 - a. If you intend to train at a Part 141 approved school, you should enroll in its training program before beginning your study program.
3. Pass an FAA practical flight test on 24 ACS tasks.
 - a. You do not have to complete an instrument skills evaluation unless you hold an instrument rating on your pilot certificate.

HOW TO PROCEED

1. If you are reading someone else's copy of ***Commercial Pilot Syllabus***, obtain a Gleim **Commercial Pilot Kit** from your FBO/flight school/bookstore, or for publisher-direct service, visit www.GleimAviation.com or call (800) 874-5346.
The **Commercial Pilot Kit** contains the ***Commercial Pilot FAA Knowledge Test Prep*** book, **FAA Test Prep Online**, **Online Ground School** (included in the Deluxe kit only), ***Commercial Pilot Flight Maneuvers and Practical Test Prep***, ***Commercial Pilot ACS and Oral Exam Guide***, and this ***Commercial Pilot Syllabus***.
2. Read this introduction (9 pages).
3. Begin preparing for your FAA commercial pilot airman knowledge test by using your Gleim books, **FAA Test Prep Online**, and/or **Online Ground School**. See your ground training syllabus.
4. Select a CFI and/or flight school.
5. Begin your flight training, scheduling at least two lessons a week. Prepare thoroughly at home for each flight lesson. Use the flight training syllabus in this book.
6. After you receive your commercial pilot certificate, consult Part II of this book on how you can add a multi-engine rating to that certificate.

PART 141 VS. PART 61 SCHOOLS

Title 14 of the Code of Federal Regulations (14 CFR) lists the requirements to obtain your commercial pilot certificate. Pilot (or flight) schools can conduct your training by following either 14 CFR Part 141 or 14 CFR Part 61.

An eligible pilot school may be issued a Part 141 pilot school certificate by the FAA after completion of an application process. Part 141 pilot schools are more regulated than a Part 61 pilot school. Additionally, a Part 141 pilot school is required to have its facilities and airplanes inspected, and it must have its ground and flight training syllabi approved by the FAA.

The majority of pilot schools, and flight instructors not associated with a Part 141 pilot school, provide the required training specified under Part 61.

The major difference between a Part 141 and a Part 61 pilot school is that a Part 141 pilot school requires FAA approval and can take a pilot through the school's private pilot, instrument rating, and commercial pilot courses in a minimum of 190 hr. compared to 250 hr. under Part 61. Additionally, Part 61 requires 100 hr. of pilot in command (PIC) time. Part 141 does not have a minimum PIC flight time requirement.

The Gleim syllabus has been reviewed by the FAA in Washington, D.C., and found to adequately meet the requirements of a syllabus under Part 141 or Part 61, as appropriate (see FAA letter on back cover). Thus, the Gleim **Commercial Pilot Syllabus** can be used by any Part 141 school with minimal effort. We suggest that school write a letter to its FAA inspector advising the FAA of the school's intent and the names of students who are going to be trained under this Gleim syllabus.

If a Part 141 pilot school cannot or will not use this syllabus, consider finding another Part 141 or Part 61 pilot school for your training or please call (800) 874-5346 if you have questions or problems.

EXPLANATION OF *COMMERCIAL PILOT TRAINING RECORD*

Also available separately from this syllabus is a *Commercial Pilot Training Record*. This record is provided for flight schools that conduct training under 14 CFR Part 141, which requires that detailed training records be maintained for each student. When properly completed, the training record will meet the training record requirements of Part 141.

Training Record Elements

The training record booklet consists of three main sections:

- The front cover contains student personal information and information about the training course.
- The back cover serves as a ground training and student evaluation record.
- The inside of the booklet consists of a two-part flight training record and a separate record of instructor endorsements.

Using the Training Record

Front Cover: The front cover of the training record should be filled out by the student, his or her flight instructor, and the chief flight instructor at the time of enrollment. Spaces provided to record credit awarded for previous ground and flight training should be completed by the chief instructor. The chief instructor should also complete the appropriate enrollment certificate (found on pages 177 and 179 of this syllabus) and place it in the pocket at the back of the training record.

At the completion of training, the chief instructor should complete the information on the front cover, as appropriate (e.g., graduation, transfer, or termination). If the student has graduated, the appropriate graduation certificate (found on pages 181 and 183 of this syllabus) should be completed and placed in the pocket at the back of the training record.

Back Cover: The ground training record should be filled out by the instructor after each ground lesson is completed, regardless of whether ground training is being conducted formally or as a self-study program. The time spent and date of completion should be noted, and the record initialed by both the student and the instructor.

The stage and end-of-course test records should be filled out by the instructor after each stage and end-of-course test has been taken by the student, graded, and reviewed with the instructor. The date of the test, the result, and the date of the review should be noted. The record should then be initialed by the student and signed by the instructor. Each stage and end-of-course exam answer sheet should also be placed in the pocket at the back of the training record.

The student evaluation records should be filled out by the check instructor following each stage check evaluation, and by the chief instructor after the end-of-course check. The date and result of the test should be noted, and the record initialed by the student and signed by the check instructor or chief instructor (the chief instructor must sign the record for the end-of-course check).

Inside: The flight training record consists of two parts: the Flight Record is a chronological record of each training flight that is made during the course, while the Flight Lesson Record is an itemized record of the student's performance on the lesson items listed in each specific flight lesson. Note that it is divided into two parts, like this syllabus, to make it easy to record your progress in the initial commercial pilot certification course as well as the multi-engine add-on rating course. The record of instructor endorsements is a record of information related to each flight instructor endorsement that is pertinent to the course of training.

The Flight Record should be used to record the following information for each flight that is performed during the course: date of the flight, aircraft make and model, aircraft registration number, flight lesson(s) undertaken during the flight (this item has been left for the instructor to complete in order to accommodate lessons that require multiple flights to complete or that must be completed out-of-sequence), initials of the instructor conducting the flight (if applicable), and the types and amounts of flight time accumulated during the flight and during the entire course to date.

The Flight Lesson Record should be used to record the student's performance on each lesson item that is contained in the lesson(s) that were undertaken during the flight. The Flight Lesson Record consists of 70 individual lesson records (one for each lesson contained in the syllabus – 60 lessons in Part I and 10 lessons in Part II). Each individual lesson record contains an itemized reprint of the lesson items contained in the corresponding flight lesson. Because it is recognized that many lessons take more than one flight to complete, each individual lesson record is designed to allow the instructor to record and grade the student's performance on each lesson item for up to eight flights.

The Flight Lesson Record should be used to record the following information for each flight lesson: the date of each flight undertaken to complete the lesson, the time spent during each pre- and post-flight briefing, and the student's performance on each lesson item. When the lesson is completed, the date of the lesson's completion should be noted, and the record initialed by the student and signed by the instructor who conducted the final flight for that lesson.

The record of instructor endorsements should be filled out by the instructor at the time that each logbook endorsement is provided. The date of the endorsement and any applicable conditions should be noted, and the record should be signed by the instructor. The instructor's flight instructor certificate number and expiration date should also be noted.

USE OF A FLIGHT SIMULATION TRAINING DEVICE (FSTD)

While the Gleim **Commercial Pilot Syllabus** was designed to be used in a course of training using only an airplane, it may also be used in a course of training in which the use of a qualified and approved flight simulation training device (FSTD) or aviation training device (ATD) has been appropriately integrated with the approval of the jurisdictional FSDO. FSTDs include full flight simulators (FFSs) and flight training devices (FTDs). Aviation training devices (ATDs) include basic (BATD) and advanced (AATD) training devices.

The requirements for using an FFS or FTD in a Part 141 FAA-approved pilot training course are discussed in 14 CFR 141.41(a). FFSs and FTDs are evaluated and qualified under 14 CFR Part 60 and require annual renewal. The requirements for using an ATD are discussed in 14 CFR 141.41(b). The approval and use of an ATD is prescribed in AC 61-136. ATDs must be accompanied by the FAA letter of authorization (LOA) and are valid for 60 calendar months.

An FSTD may only be used in accordance with the authorization for each specific device. Generally, an ATD may not be used for credit toward the following types of aeronautical experience: cross-country, night, solo, lessons requiring specific quantities of takeoffs and landings, or to meet the requirement to have 3 hours of instruction within 2 calendar months of a practical test.

All training time in an FSTD/ATD must be provided by an authorized flight instructor and documented in accordance with 14 CFR 61.51. There are no restrictions on the amount of training time that may be accomplished and logged in an FSTD/ATD; however, there are regulatory limitations on the maximum credit allowed in an FFS, FTD, or ATD toward the “minimum” pilot experience requirements. Training under Part 141 in an FSTD/ATD may be credited up to the maximum time in the table below toward the 120-hour total time requirement for a commercial pilot certificate.

Type of FSTD	Allowance	Hours
FFS (Part 141)	30%	36.0
FTD (Part 141)	20%	24.0
ATD (Part 141)	20%	24.0

The specific lessons that can be completed in an FFS, FTD, and/or ATD are indicated with the words “FSTD/ATD option” under the lesson title. If an FSTD/ATD is available, the instructor and student should work together to determine which lessons would provide the greatest benefits while still meeting FAA requirements.

A pilot school operating under Part 61 may also elect to use the FFSs, FTDs, or ATDs identified above in accordance with the specific authorization for that use as outlined in the various sections of Part 61 [such as a maximum of 50 hours of flight training under 14 CFR 61.129(i)]. The specific lessons that can be completed in an FFS, FTD, and/or ATD are indicated with the words “FSTD/ATD option” under the lesson title. If an FSTD/ATD is available, the instructor and student should work together to determine which lessons would provide the greatest benefits while still meeting FAA requirements.

AIRPLANE(S) AND LOCAL AIRPORT(S) WORKSHEETS

The airplane(s) worksheets on pages 7 and 8 are to be used as a study reference of fuel, oil, and airspeeds for the airplane(s) you may use during your training. The first airplane worksheet is designed to accommodate single-engine airplanes, and the second worksheet is intended for multi-engine airplanes. The local airport(s) worksheet on page 9 is to be used as a study reference of radio frequencies, traffic pattern direction, and runway lengths at your primary airport and any other local airports you may use during your training.

SINGLE-ENGINE AIRPLANE(S) WORKSHEET

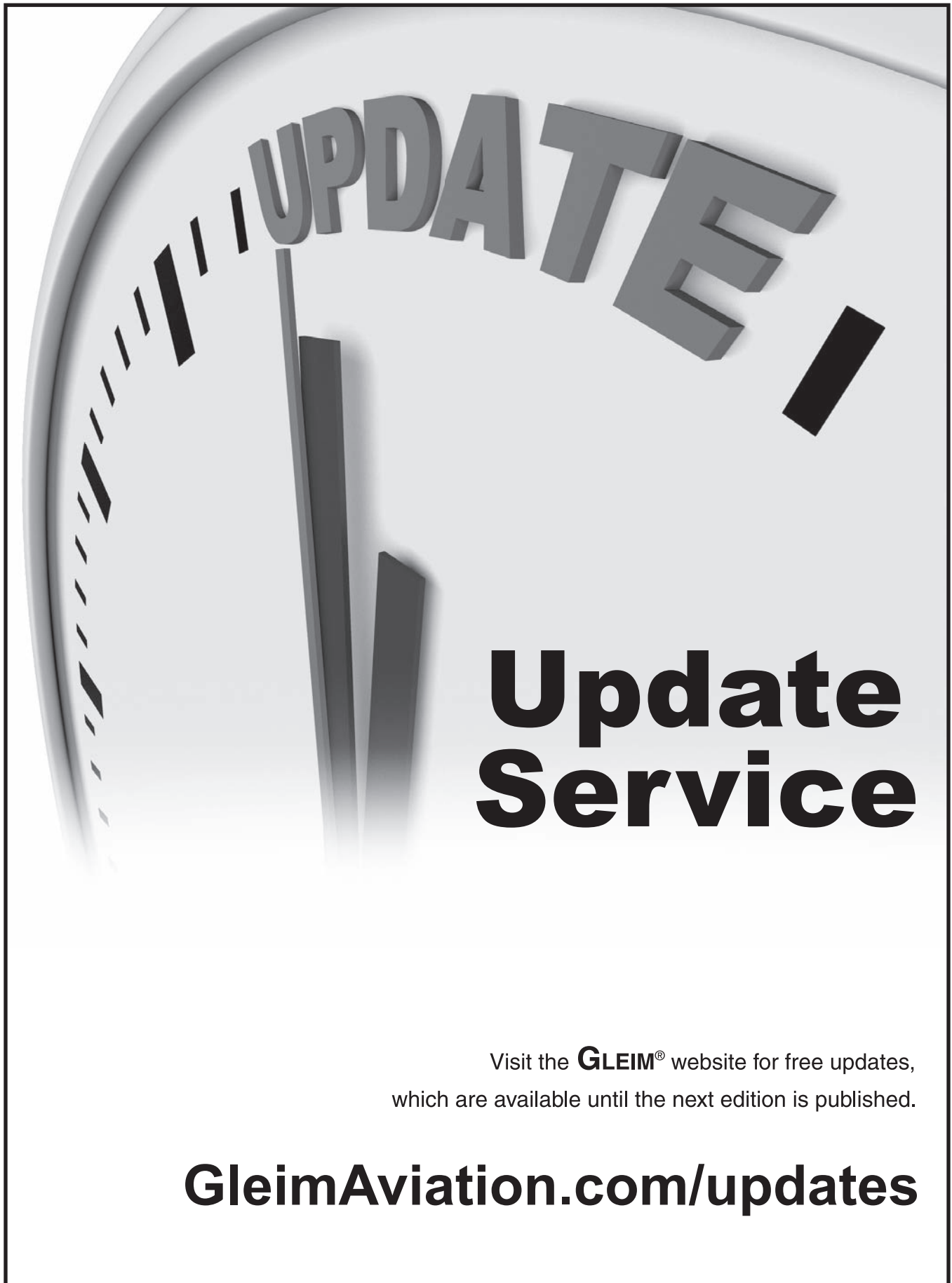
N-number	_____	_____	_____	_____	_____
Make & Model	_____	_____	_____	_____	_____
Max. Ramp Wt.	_____	_____	_____	_____	_____
Fuel Capacity	_____	_____	_____	_____	_____
Min. Fuel for Flight	_____	_____	_____	_____	_____
Oil Capacity	_____	_____	_____	_____	_____
Min. Oil for Flight	_____	_____	_____	_____	_____
V_{SO}	_____	_____	_____	_____	_____
V_{S1}	_____	_____	_____	_____	_____
V_R	_____	_____	_____	_____	_____
V_X	_____	_____	_____	_____	_____
V_Y	_____	_____	_____	_____	_____
V_{FE}	_____	_____	_____	_____	_____
V_A	_____	_____	_____	_____	_____
V_{LO}	_____	_____	_____	_____	_____
V_{LE}	_____	_____	_____	_____	_____
V_{NO}	_____	_____	_____	_____	_____
V_{NE}	_____	_____	_____	_____	_____
Best Glide	_____	_____	_____	_____	_____

MULTI-ENGINE AIRPLANE(S) WORKSHEET

N-number	_____	_____	_____	_____	_____
Make & Model	_____	_____	_____	_____	_____
Max. Ramp Wt.	_____	_____	_____	_____	_____
Fuel Capacity	_____	_____	_____	_____	_____
Min. Fuel for Flight	_____	_____	_____	_____	_____
Oil Capacity	_____	_____	_____	_____	_____
Min. Oil for Flight	_____	_____	_____	_____	_____
V_{SO}	_____	_____	_____	_____	_____
V_{S1}	_____	_____	_____	_____	_____
V_{MC}	_____	_____	_____	_____	_____
V_R	_____	_____	_____	_____	_____
V_X	_____	_____	_____	_____	_____
V_{XSE}	_____	_____	_____	_____	_____
V_Y	_____	_____	_____	_____	_____
V_{YSE}	_____	_____	_____	_____	_____
V_{FE}	_____	_____	_____	_____	_____
V_A	_____	_____	_____	_____	_____
V_{LO}	_____	_____	_____	_____	_____
V_{LE}	_____	_____	_____	_____	_____
V_{NO}	_____	_____	_____	_____	_____
V_{NE}	_____	_____	_____	_____	_____
Best Glide	_____	_____	_____	_____	_____

LOCAL AIRPORT(S) WORKSHEET

Airport Name	_____	_____	_____	_____	_____
Identifier	_____	_____	_____	_____	_____
Elevation	_____	_____	_____	_____	_____
ATIS	_____	_____	_____	_____	_____
Ground	_____	_____	_____	_____	_____
Tower	_____	_____	_____	_____	_____
UNICOM	_____	_____	_____	_____	_____
Runway	_____	_____	_____	_____	_____
Length	_____	_____	_____	_____	_____
Traffic Pattern	Left or Right _____	Left or Right _____	Left or Right _____	Left or Right _____	Left or Right _____
Obstructions	_____	_____	_____	_____	_____
Runway	_____	_____	_____	_____	_____
Length	_____	_____	_____	_____	_____
Traffic Pattern	Left or Right _____	Left or Right _____	Left or Right _____	Left or Right _____	Left or Right _____
Obstructions	_____	_____	_____	_____	_____
Runway	_____	_____	_____	_____	_____
Length	_____	_____	_____	_____	_____
Traffic Pattern	Left or Right _____	Left or Right _____	Left or Right _____	Left or Right _____	Left or Right _____
Obstructions	_____	_____	_____	_____	_____
Runway	_____	_____	_____	_____	_____
Length	_____	_____	_____	_____	_____
Traffic Pattern	Left or Right _____	Left or Right _____	Left or Right _____	Left or Right _____	Left or Right _____
Obstructions	_____	_____	_____	_____	_____
Traffic Pattern Altitude	_____	_____	_____	_____	_____



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PART I: COMMERCIAL PILOT TRAINING SYLLABUS AIRPLANE SINGLE-ENGINE LAND

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PART 141 STUDENT INFORMATION

Enrollment Prerequisites

You must hold at least a private pilot certificate, with an airplane category and single-engine land rating and an instrument rating, with an airplane category, prior to enrolling in the flight portion of the commercial pilot certification course. If you do not hold an instrument rating at the time of enrollment, you may continue the course if you are concurrently enrolled in an approved instrument rating course.

Graduation Requirements

You must complete the training specified in this syllabus, with a minimum of 35 hours of ground training in the specified aeronautical knowledge areas and a minimum of 120 hours of flight training. These requirements are reflected in the Gleim ground and flight training syllabus.

Stage Checks

You must score a minimum of 80% on the knowledge test at the completion of each stage in the ground training syllabus and on the comprehensive end-of-course knowledge test at the conclusion of the training.

You must satisfactorily complete a stage check at the completion of each stage of the flight training syllabus, as well as a comprehensive end-of-course check when all flight training is complete.

Credit for Previous Training

You may be given credit toward this commercial pilot course for previous pilot experience and knowledge [14 CFR 141.77(c)]:

1. If the credit is based on a Part 141 training course, the credit may be 50% of the requirements for this course.
2. If the credit is based on a Part 61 course, the credit cannot exceed 25% of the requirements for this course.

The receiving school will determine the amount of course credit to be given, based on a proficiency test, a knowledge test, or both.

STRUCTURE OF THE GLEIM COMMERCIAL PILOT SYLLABUS (SINGLE-ENGINE LAND)

This syllabus consists of a ground training syllabus and a flight training syllabus. The ground and flight training may be done together as an integrated course of instruction, or each may be done separately. If done separately, the ground syllabus may be conducted as a home-study course or as a formal ground school.

This syllabus was constructed using the building-block progression of learning, in which the student is required to perform each simple task correctly before a more complex task is introduced. This method will promote the formation of correct habit patterns from the beginning.

Ground Training Syllabus

The ground training syllabus contains 11 lessons, which are divided into two stages. The ground training syllabus meets the training requirements of Appendix D to Part 141 and 14 CFR 61.125. The ground training can be conducted concurrently with the flight training, with the ground lessons completed in order as outlined in the lesson matrix. Ground training may also be conducted as part of a formal ground school or as a home-study program.

It is recommended that the lessons be completed in sequence, but the syllabus is flexible enough to meet the needs of an individual student or of a particular training environment. When departing from the sequence, the instructor is responsible for considering the blocks of learning affected and, if used by a Part 141 pilot school, whether it would affect FAA approval.

Each ground lesson involves studying the appropriate section(s) in Gleim **Aviation Weather and Weather Services, FAR/AIM, and Pilot Handbook**. After each reading assignment is completed, answer the questions in the appropriate study unit in Gleim **Commercial Pilot FAA Knowledge Test Prep** and review incorrect responses with your instructor.

Alternatively, Gleim **FAA Test Prep Online** or **Online Ground School** can be used to answer the questions at the end of each ground lesson. Our software and online course contain the FAA figures and outlines in addition to the questions.

FAA Test Prep Online allows you to select either Study Mode or Test Mode. In Study Mode, the software provides you with an explanation of each answer you choose (correct or incorrect).

In Test Mode, the software emulates the operation of the FAA-approved computer testing centers. Thus, you will have a complete understanding of exactly how to take an FAA pilot knowledge test before you go to a computer testing center. When you finish your test, you can study the questions missed and access answer explanations.

At the end of each stage, you are required to complete the stage knowledge test before proceeding to the next stage. The end-of-course knowledge test is completed after the Stage Two knowledge test. Shortly after the end-of-course test, you should take the FAA commercial pilot (airplane) knowledge test. The stage knowledge tests in the ground syllabus will refer you to FAA figures located after the knowledge tests in this book. If you utilize the **Online Ground School**, you will be provided stage tests and an end-of-course test online. Upon successful completion of the end-of-course knowledge test, the system will automatically generate an endorsement for you to take the knowledge test. Online Ground School is especially valuable for a student who is studying for the knowledge test before beginning his or her flight training.

If this ground training is used as home study, we recommend that you complete the syllabus as quickly as possible and pass the FAA commercial pilot (airplane) knowledge test so you will have more time to prepare for your flight lessons.

Flight Training Syllabus

The flight training syllabus contains 60 lessons, which are divided into three stages. It is recommended that each lesson be completed in sequential order.

Stage One of the flight training syllabus is designed to provide you with the knowledge and the skill required to safely operate a complex airplane. Additionally, you will be introduced to commercial flight maneuvers.

Stage Two is designed to increase your skill and proficiency in both day and night VFR cross-country operations.

Stage Three is designed to provide you with the instruction and practice necessary to attain the skill level required to pass the FAA commercial pilot practical test.

Stage checks. Stage checks are designed to ensure that the student has acquired the necessary knowledge and skill. The Stage One check (Lesson 17) is to ensure that you are proficient in operating a complex airplane. The Stage Two check (Lesson 34) is to ensure that you are proficient in planning and conducting VFR cross-country flights. The Stage Three check (Lesson 59) is to ensure that you are proficient in commercial pilot flight maneuvers. The End-of-Course check (Lesson 60) is to ensure that you are proficient in all commercial pilot knowledge and skill areas and are ready for the commercial pilot practical test. It is also the final evaluation for a Part 141 graduation certificate.

The chief flight instructor (Part 141) is responsible for ensuring that each pilot accomplishes the required stage checks and the end-of-course test. The chief flight instructor may delegate authority for conducting stage checks and the end-of-course test to the assistant chief flight instructor or a check instructor.

Stage checks will be used as a review by instructors training under Part 61 to ensure that the student has the appropriate knowledge and skills.

Sequence of a flight lesson. Each flight lesson will begin with a preflight briefing. During this time, the instructor should first answer any questions you may have from the previous lesson. Next, your instructor will brief you on the lesson content, followed by an evaluation of your preparation for the lesson.

During the flight portion of the lesson, your instructor should begin with those maneuvers listed as “review items” before introducing new maneuvers. Items that include “**(IR)**” should be accomplished by reference to instruments only. The time required for each lesson will vary depending on the airport and the location of the training areas.

At the end of each lesson, your instructor will conduct a postflight critique and a preview of the next lesson. This time should be used to review the good points during the lesson, to identify and explain fully any problem areas, and to discuss how to correct the problems.

The length of the preflight briefing and postflight critique will vary with each student and with his or her degree of preparedness for the lesson.

Pilot preparation. The key to minimizing frustration and costs is preparation. You should budget an average of 2 to 4 hours of home study prior to each flight lesson. Learning will be easier when you are fully prepared so that your instructor can maximize the time spent in flight training.

Use of a complex airplane. A complex airplane is defined as an airplane that has retractable landing gear, flaps, and a controllable pitch propeller (including airplanes where the propeller pitch is digitally controlled, such as a full authority digital engine control – FADEC). During the commercial pilot practical test, the takeoff and landing maneuvers, and appropriate emergency procedures, must be accomplished in a complex airplane. We have developed the flight training syllabus under the assumption that a pilot will use a complex airplane for the entire practical test.

Flight 15 Complex--Maneuvers Review	51	1.5							1.5	
Flight 16 Solo Practice	52		1.5							
Ground Stage One Knowledge Test	25									1.0
Flight 17 Stage One Check	53	1.5							1.5	
STAGE ONE TOTALS		17.5	7.5	0.0	0.0	1.0	1.5	0.0	8.5	15.0

LESSON	Page	Flight								Ground
		Flight Training Dual	Flight Training Solo	Dual Cross-Country	Solo Cross-Country	Instrument	Night Dual	Night Solo	Complex Airplane Dual	Aeronautical Knowledge Training
STAGE TWO										
Ground 6 Aeromedical/ADM	26									2.5
Ground 7 Aviation Weather	27									3.0
Flight 18 Maneuvers Review	55	1.5				0.5				
Ground 8 Aviation Weather Services	28									3.0
Flight 19 Dual Cross-Country	56	4.0		4.0		1.5				
Flight 20 Night Flight--Local	57	1.5				0.5	1.5			
Ground 9 Navigation: Charts, Publications, Flight Computers	29									3.0
Flight 21 Dual Night Cross-Country	58	3.0		3.0		1.0	3.0			
Flight 22 Solo Night--Local	59		1.5					1.5		
Ground 10 Navigation Systems	30									2.5
Flight 23 Solo Night Cross-Country	60		3.0		3.0			3.0		
Flight 24 Solo Cross-Country	61		3.0		3.0					
Flight 25 Instrument Review	62	1.5				1.5				
Flight 26 Solo Cross-Country	63		5.0		5.0					
Flight 27 Solo Cross-Country	64		5.0		5.0					
Flight 28 Solo Night--Local	65		1.5					1.5		
Flight 29 Solo Cross-Country	66		5.0		5.0					
Flight 30 Solo Cross-Country	67		5.0		5.0					
Ground 11 Flight Operations	31									2.0
Flight 31 Maneuvers Review	68	1.5				0.5				
Flight 32 Solo Cross-Country	69		5.0		5.0					
Flight 33 Solo Cross-Country	70		7.0		7.0					
Ground Stage Two Knowledge Test	32									1.0
Ground End-of-Course Knowledge Test	32									3.0
Flight 34 Stage Two Check	71	1.0				0.5				
STAGE TWO TOTALS		14.0	41.0	7.0	38.0	6.0	4.5	6.0	0.0	20.0

LESSON	Page	Flight								Ground
		Flight Training Dual	Flight Training Solo	Dual Cross-Country	Solo Cross-Country	Instrument	Night Dual	Night Solo	Complex Airplane Dual	Aeronautical Knowledge Training
STAGE THREE										
Flight 35 Complex--Perf. Maneuvers	73	1.5							1.5	
Flight 36 Complex--Eights-on-Pylons	74	1.5				0.5			1.5	
Flight 37 Solo Practice	75		1.5							
Flight 38 Solo Practice	76		1.5							
Flight 39 Maneuvers Review	77	1.5								
Flight 40 Maneuvers Review	78	1.5								
Flight 41 Solo Practice	79		1.5							
Flight 42 Solo Practice	80		1.5							
Flight 43 Complex--Maneuvers Review	81	1.5				0.5			1.5	
Flight 44 Solo Practice	82		1.5							
Flight 45 Maneuvers Review	83	1.5								
Flight 46 Solo Practice	84		1.5							
Flight 47 Maneuvers Review	85	1.5								
Flight 48 Maneuvers Review	86	1.5				0.5				
Flight 49 Solo Practice	87		1.5							
Flight 50 Solo Practice	88		1.5							
Flight 51 Complex--Maneuvers Review	89	1.5							1.5	
Flight 52 Solo Practice	90		1.5							
Flight 53 Maneuvers Review	91	1.5				0.5				
Flight 54 Dual Cross-Country	92	3.0		3.0		1.0				
Flight 55 Solo Practice	93		1.5							
Flight 56 Maneuvers Review	94	1.0								
Flight 57 Solo Practice	95		1.5							
Flight 58 Complex--Maneuvers Review	96	1.0							1.0	
Flight 59 Stage Three Check	97	1.5							1.5	
Flight 60 End-of-Course Check	98	2.0							2.0	
STAGE THREE TOTALS		23.5	16.5	3.0	0.0	3.0	0.0	0.0	10.5	0.0
COURSE TOTALS		55.0	65.0	10.0**	38.0**	10.0	6.0	6.0	19.0	35.0
		TOTAL TIMES*								

Part 61 requires:

* 250 total logged hours

** 50 hours of total PIC cross country time

(Increase lesson times or repeat lessons as necessary to meet the minimum total time requirement and reach the appropriate level of pilot proficiency.)

NOTE: Any flight lesson in this training syllabus may be conducted in a complex airplane at the discretion of the flight instructor and/or chief flight instructor, as appropriate. We have indicated the minimum number of lessons that must be completed in a complex airplane. This syllabus does not require solo operations in a complex airplane, but solo lessons may also be conducted in a complex airplane at the discretion of the flight instructor and/or chief flight instructor, as appropriate.

PART I: COMMERCIAL PILOT GROUND TRAINING SYLLABUS AIRPLANE SINGLE-ENGINE LAND

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GROUND TRAINING COURSE OBJECTIVES

The pilot will obtain the necessary aeronautical knowledge and meet the prerequisites specified in Appendix D to 14 CFR Part 141 (and 14 CFR 61.125) to successfully pass the commercial pilot (airplane) airman knowledge test.

GROUND TRAINING COURSE COMPLETION STANDARDS

The pilot will demonstrate through stage knowledge tests and school records that (s)he meets the prerequisites specified in Appendix D to 14 CFR Part 141 (and 14 CFR 61.125) and has the aeronautical knowledge necessary to pass the commercial pilot (airplane) airman knowledge test.

<u>Lesson</u>	<u>Topic</u>	<u>Min. Time in Hours</u>
Stage One		
1	Airplanes and Aerodynamics	3.0
2	Airplane Instruments, Engines, and Systems	3.0
3	Airports, Air Traffic Control, and Airspace	2.0
4	Federal Aviation Regulations	3.0
5	Airplane Performance and Weight and Balance	3.0
	Stage One Knowledge Test	1.0
Stage Two		
6	Aeromedical Factors and Aeronautical Decision Making (ADM)	2.5
7	Aviation Weather	3.0
8	Aviation Weather Services	3.0
9	Navigation: Charts, Publications, Flight Computers	3.0
10	Navigation Systems	2.5
11	Flight Operations	2.0
	Stage Two Knowledge Test	1.0
	End-of-Course Knowledge Test	<u>3.0</u>
		<u>35.0</u>

STAGE ONE**Stage One Objective**

To further develop the pilot's knowledge of airplanes and the aerodynamic principles of flight. The pilot will learn about the operation of various airplane systems, airport operations, radio communication procedures, air traffic control (ATC) radar services, and the National Airspace System (NAS). Additionally, the pilot will become familiar with pertinent Federal Aviation Regulations (14 CFR) and the accident-reporting requirements of the National Transportation Safety Board (NTSB). Finally, the pilot will review the use of performance charts and weight and balance computations.

Stage One Completion Standards

Stage One will have been successfully completed when the pilot passes the Stage One knowledge test with a minimum passing grade of 80%.

<u>Lesson</u>	<u>Topic</u>	<u>Min. Time</u>
1	Airplanes and Aerodynamics	3.0
2	Airplane Instruments, Engines, and Systems	3.0
3	Airports, Air Traffic Control, and Airspace	2.0
4	Federal Aviation Regulations	3.0
5	Airplane Performance and Weight and Balance	3.0
	Stage One Knowledge Test	1.0

GROUND LESSON 1: AIRPLANES AND AERODYNAMICS

Objective

To further develop the pilot’s knowledge of basic aerodynamics and the principles of flight.

Text References

- Pilot Handbook*, Study Unit 1, “Airplanes and Aerodynamics”
- Commercial Pilot FAA Knowledge Test Prep*, Study Unit 1, “Airplanes and Aerodynamics”

<i>Pilot Handbook</i> Study Unit 1 Contents	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 1 Contents
1.1 Definitions 1.2 The Airplane 1.3 Composite Construction 1.4 Axes of Rotation 1.5 Flight Controls and Control Surfaces 1.6 Forces Acting on the Airplane in Flight 1.7 Dynamics of the Airplane in Flight 1.8 Ground Effect 1.9 How Airplanes Turn 1.10 Torque (Left-Turning Tendency) 1.11 Airplane Stability 1.12 Loads and Load Factors 1.13 Stalls and Spins 1.14 Angle of Attack Indicators	1.1 Flaps 1.2 Airplane Wings 1.3 Stalls 1.4 Spins 1.5 Lift and Drag 1.6 Ground Effect 1.7 Airplane Stability 1.8 Turns 1.9 Load Factor 1.10 Transonic and Supersonic Flight

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 1, “Airplanes and Aerodynamics,” of *Commercial Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>Pilot Handbook</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____

Notes:

GROUND LESSON 2: AIRPLANE INSTRUMENTS, ENGINES, AND SYSTEMS

Objective

To further develop the pilot’s knowledge of the airplane’s instruments, engines, and systems.

Text References

Pilot Handbook, Study Unit 2, “Airplane Instruments, Engines, and Systems”

Commercial Pilot FAA Knowledge Test Prep, Study Unit 2, “Airplane Instruments, Engines, and Systems”

<i>Pilot Handbook</i> Study Unit 2 Contents	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 2 Contents
2.1 Pitot-Static System	2.1 Magnetic Compass
2.2 Altimeter	2.2 Airspeed Indicator
2.3 Vertical Speed Indicator	2.3 Turn Coordinator/Turn-and-Slip Indicator
2.4 Airspeed Indicator	2.4 Glass Cockpits
2.5 Gyroscopic Flight Instruments	2.5 Fuel/Air Mixture
2.6 Turn Coordinator	2.6 Carburetor Heat
2.7 Turn-and-Slip Indicator	2.7 Detonation and Preignition
2.8 Attitude Indicator	2.8 Airplane Ignition Systems
2.9 Heading Indicator	2.9 Engine Cooling
2.10 Magnetic Compass	2.10 Airplane Propellers
2.11 Compass Errors	
2.12 Glass Cockpit Instrumentation	
2.13 Airplane Engines	
2.14 How an Engine Operates	
2.15 Ignition System	
2.16 Induction System	
2.17 Fuel System	
2.18 Oil System	
2.19 Cooling System	
2.20 Propellers	
2.21 Full Authority Digital Engine Control (FADEC)	
2.22 Electrical System	
2.23 Landing Gear System	
2.24 Environmental System	
2.25 Deice and Anti-Ice Systems	

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 2, “Airplane Instruments, Engines, and Systems,” of *Commercial Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>Pilot Handbook</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____

Notes:

GROUND LESSON 3: AIRPORTS, AIR TRAFFIC CONTROL, AND AIRSPACE

Objective

To further develop the pilot’s knowledge of airports, wake turbulence and collision avoidance, and the National Airspace System.

Text References

Pilot Handbook, Study Unit 3, “Airports, Air Traffic Control, and Airspace”
Commercial Pilot FAA Knowledge Test Prep, Study Unit 3, “Airports, Air Traffic Control, and Airspace”

<i>Pilot Handbook</i> Study Unit 3 Contents	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 3 Contents
3.1 Runway and Taxiway Markings	3.1 Airspace
3.2 Airport Lighting	3.2 Airport Signs/Markings
3.3 Visual Glideslope Indicators	3.3 Collision Avoidance
3.4 Wind and Landing Direction Indicators and Segmented Circles	3.4 Wake Turbulence
3.5 Airport Traffic Patterns	3.5 Land and Hold Short Operations (LAHSO)
3.6 Land and Hold Short Operations (LAHSO)	
3.7 Wake Turbulence	
3.8 Collision Avoidance	
3.9 Radio Communications and Phraseology	
3.10 Airports without an Operating Control Tower	
3.11 Automated Weather Reporting Systems	
3.12 Airports with an Operating Control Tower	
3.13 Automatic Terminal Information Service (ATIS)	
3.14 Ground Control	
3.15 Tower Control	
3.16 Approach Control and Departure Control (for VFR Aircraft)	
3.17 Clearance Delivery	
3.18 Emergencies	
3.19 Radio Failure Procedures	
3.20 Emergency Locator Transmitter (ELT)	
3.21 ATC Radar	
3.22 Transponder Operation	
3.23 Radar Services to VFR Aircraft	
3.24 General Dimensions of Airspace	
3.25 Controlled and Uncontrolled Airspace	
3.26 Class A Airspace	
3.27 Class B Airspace	
3.28 Class C Airspace	
3.29 Class D Airspace	
3.30 Class E Airspace	
3.31 Class G Airspace	
3.32 Special-Use Airspace	
3.33 Other Airspace Areas	
3.34 Special Flight Rules Areas	
3.35 Next Generation Air Transportation System (NextGen)	

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 3, “Airports, Air Traffic Control, and Airspace,” of *Commercial Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>Pilot Handbook</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____
Notes:		

GROUND LESSON 4: FEDERAL AVIATION REGULATIONS

Objective

To further develop the pilot’s knowledge of pertinent federal regulations that relate to commercial pilots and the accident-reporting rules of the National Transportation Safety Board (NTSB).

Text References

FAR/AIM

Commercial Pilot FAA Knowledge Test Prep, Study Unit 4, “Federal Aviation Regulations”

<i>FAR/AIM</i> Contents	Sections	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 4 Contents
Part 1 -- Definitions and Abbreviations		4.1 14 CFR Part 1
Part 61 -- Certification: Pilots, Flight Instructors, and Ground Instructors		4.2 14 CFR Part 23
Part 91 -- General Operating and Flight Rules	91.1-.417	4.3 14 CFR Part 61
Part 119 -- Certification: Air Carriers and Commercial Operators	119.1	4.4 14 CFR Part 91
NTSB Part 830 -- Notification and Reporting of Aircraft Accidents or Incidents and Overdue Aircraft, and Preservation of Aircraft Wreckage, Mail, Cargo, and Records		4.5 14 CFR Part 119
		4.6 NTSB Part 830
		4.7 Near Midair Collision Reporting

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 4, “Federal Aviation Regulations,” of *Commercial Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>FAR/AIM</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____

Notes:

GROUND LESSON 5: AIRPLANE PERFORMANCE AND WEIGHT AND BALANCE

Objective

To further develop the pilot’s ability to determine airplane performance, including weight and balance. Additionally, the pilot will learn the significance and effects of exceeding the airplane’s performance limitations.

Text References

Pilot Handbook, Study Unit 5, “Airplane Performance and Weight and Balance”
Commercial Pilot FAA Knowledge Test Prep, Study Unit 5, “Airplane Performance and Weight and Balance”

<i>Pilot Handbook</i> Study Unit 5 Contents	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 5 Contents
5.1 Determinants of Airplane Performance	5.1 Density Altitude
5.2 Standard Atmosphere	5.2 Density Altitude Computations
5.3 Pressure Altitude	5.3 Takeoff Distance
5.4 Density Altitude	5.4 Time, Fuel, and Distance to Climb
5.5 Takeoff Performance	5.5 Maximum Rate of Climb
5.6 Climb Performance	5.6 Cruise and Range Performance
5.7 Cruise and Range Performance	5.7 Crosswind/Headwind Component
5.8 Glide Performance	5.8 Landing Distance
5.9 Crosswind Performance	5.9 Weight and Balance
5.10 Landing Performance	5.10 Weight and Moment Computations
5.11 Stall Speed Performance	5.11 Weight Change and Weight Shift Computations
5.12 Weight and Balance Overview	
5.13 Weight and Balance Management	
5.14 Weight and Balance Terms	
5.15 Basic Principles of Weight and Balance	
5.16 Methods of Determining Weight and Balance	
5.17 Center of Gravity Calculations	
5.18 Center of Gravity Charts	
5.19 Center of Gravity Tables	
5.20 Weight Change and Weight Shift Computations	

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 5, “Airplane Performance and Weight and Balance,” of *Commercial Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>Pilot Handbook</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____

Notes:

STAGE ONE KNOWLEDGE TEST**Objective**

To evaluate the pilot's understanding of the material presented during Ground Lesson 1 through Ground Lesson 5. The Stage One knowledge test consists of 25 questions on pages 128-129.

ContentLesson

- 1 Airplanes and Aerodynamics
- 2 Airplane Instruments, Engines, and Systems
- 3 Airports, Air Traffic Control, and Airspace
- 4 Federal Aviation Regulations
- 5 Airplane Performance and Weight and Balance

Completion Standards

The lesson will have been successfully completed when the pilot has completed the Stage One knowledge test with a minimum passing grade of 80%.

STAGE TWO**Stage Two Objective**

To further develop the pilot's knowledge of aeromedical factors and the aeronautical decision-making process related to all flights. The pilot will learn how weather affects flying, including how to recognize and avoid critical weather situations such as wind shear. The pilot will be able to interpret aviation reports, forecasts, and charts. Additionally, the pilot will review the use of navigation charts, plotters, flight computers, and flight publications for cross-county flight planning. Finally, the pilot will review various navigation systems and maneuvers, procedures, and emergency operations.

Stage Two Completion Standards

Stage Two will have been successfully completed when the pilot passes the Stage Two knowledge test with a minimum passing grade of 80%.

<u>Lesson</u>	<u>Topic</u>	<u>Min. Time</u>
6	Aeromedical Factors and Aeronautical Decision Making (ADM)	2.5
7	Aviation Weather	3.0
8	Aviation Weather Services	3.0
9	Navigation: Charts, Publications, Flight Computers	3.0
10	Navigation Systems	2.5
11	Flight Operations	2.0
	Stage Two Knowledge Test	1.0
	End-of-Course Knowledge Test	3.0

GROUND LESSON 6: AEROMEDICAL FACTORS AND AERONAUTICAL DECISION MAKING (ADM)

Objective

To further develop the pilot’s knowledge of the medical factors related to flight and to the aeronautical decision-making (ADM) process.

Text References

Pilot Handbook, Study Unit 6, “Aeromedical Factors and Aeronautical Decision Making (ADM)”
Commercial Pilot FAA Knowledge Test Prep, Study Unit 6, “Aeromedical Factors and Aeronautical Decision Making (ADM)”

<i>Pilot Handbook</i> Study Unit 6 Contents	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 6 Contents
6.1 Fitness for Flight 6.2 Hypoxia 6.3 Dehydration 6.4 Hyperventilation 6.5 Carbon Monoxide Poisoning 6.6 Decompression Sickness after Scuba Diving 6.7 Motion Sickness 6.8 Sinus and Ear Block 6.9 Spatial Disorientation 6.10 Illusions in Flight 6.11 Vision 6.12 Aeronautical Decision Making (ADM) 6.13 Weather-Related Decision Making 6.14 Stress and Flying 6.15 Identifying the Enemy 6.16 Single-Pilot Resource Management (SRM) 6.17 Automation Management	6.1 Hypoxia and Alcohol 6.2 Hyperventilation 6.3 Spatial Disorientation 6.4 Pilot Vision 6.5 Aeronautical Decision Making (ADM)

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 6, “Aeromedical Factors and Aeronautical Decision Making (ADM),” of *Commercial Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>Pilot Handbook</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____

Notes:

GROUND LESSON 7: AVIATION WEATHER

Objective

To further develop the pilot’s knowledge of weather, as related to flight operations. Additionally, the pilot will be able to recognize critical weather situations and wind shear recognition and avoidance.

Text References

- Pilot Handbook*, Study Units 7, “Aviation Weather”
- Commercial Pilot FAA Knowledge Test Prep*, Study Unit 7, “Aviation Weather”

<i>Pilot Handbook</i> Study Unit 7 Contents	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 7 Contents
7.1 The Earth’s Atmosphere	7.1 Causes of Weather
7.2 Temperature	7.2 High/Low Pressure Areas
7.3 Atmospheric Pressure	7.3 Jet Stream
7.4 Wind	7.4 Temperature
7.5 Moisture, Cloud Formation, and Precipitation	7.5 Clouds
7.6 Stable and Unstable Air	7.6 Fog
7.7 Clouds	7.7 Stability
7.8 Air Masses and Fronts	7.8 Thunderstorms and Icing
7.9 Turbulence	7.9 Turbulence
7.10 Icing	7.10 Wind Shear
7.11 Thunderstorms	
7.12 Fog	

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 7, “Aviation Weather,” of *Commercial Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>Pilot Handbook</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____

Notes:

GROUND LESSON 8: AVIATION WEATHER SERVICES

Objective

To further develop the pilot’s ability to interpret and use weather charts, reports, forecasts, and broadcasts.

Text References

- Pilot Handbook*, Study Unit 8, “Aviation Weather Services”
- Commercial Pilot FAA Knowledge Test Prep*, Study Unit 8, “Aviation Weather Services”

<i>Pilot Handbook</i> Study Unit 8 Contents	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 8 Contents
8.1 Flight Service Station (FSS)	8.1 Sources of Weather Information
8.2 Aviation Routine Weather Report (METAR)	8.2 Aviation Routine Weather Report (METAR)
8.3 Pilot Weather Report (PIREP)	8.3 Surface Analysis Chart
8.4 Terminal Aerodrome Forecast (TAF)	8.4 Constant Pressure Charts
8.5 Aviation Area Forecast (FA)	8.5 Terminal Aerodrome Forecast (TAF)
8.6 Graphical Forecasts for Aviation (GFA)	8.6 In-Flight Weather Advisories
8.7 In-Flight Aviation Weather Advisories	8.7 Low-Level and High-Level Prognostic Charts
8.8 Winds and Temperatures Aloft Forecast (FB)	8.8 Other Charts and Forecasts
8.9 Surface Analysis Chart	
8.10 Ceiling and Visibility Analysis (CVA)	
8.11 Radar Observations	
8.12 Short-Range Surface Prognostic (PROG) Chart	
8.13 Low-Level Significant Weather (SIGWX) Chart	
8.14 DUATS	
8.15 Leidos Flight Service Online	
8.16 Aviation Weather Resources on the Internet	

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 8, “Aviation Weather Services,” of *Commercial Pilot FAA Knowledge Test Prep*, *FAA Test Prep Online*, and/or *Online Ground School* with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>Pilot Handbook</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____

Notes:

GROUND LESSON 9: NAVIGATION: CHARTS, PUBLICATIONS, FLIGHT COMPUTERS

Objective

To further develop the pilot’s knowledge of, and the ability to use, navigation charts, publications, and a flight computer in planning a VFR cross-country flight.

Text References

Pilot Handbook, Study Unit 9, “Navigation: Charts, Publications, Flight Computers”

Commercial Pilot FAA Knowledge Test Prep, Study Unit 9, “Navigation: Charts, Publications, Flight Computers”

<i>Pilot Handbook</i> Study Unit 9 Contents	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 9 Contents
9.1 VFR Navigation Charts 9.2 Longitude and Latitude 9.3 Sectional Chart Symbolology 9.4 FAA Advisory Circulars (ACs) 9.5 <i>Aeronautical Information Manual (AIM)</i> 9.6 Chart Supplement U.S. 9.7 Notice to Airmen (NOTAM) System 9.8 Flight Computers 9.9 The Gleim Flight Computer 9.10 The Calculator Side of the Flight Computer 9.11 Conversion of Nautical Miles to Statute Miles and Vice Versa 9.12 Speed, Distance, and Time Computations 9.13 Fuel Computations 9.14 True Airspeed and Density Altitude 9.15 Corrected (Approximately True) Altitude 9.16 Off-Course Correction 9.17 Radius of Action 9.18 Other Conversions 9.19 Temperature Conversions 9.20 The Wind Side of the Gleim Flight Computer 9.21 Determining Magnetic Heading and Groundspeed 9.22 Determining Wind Direction and Speed 9.23 Determining Altitude for Most Favorable Winds 9.24 Alternative: E6B Computer Approach to Magnetic Heading 9.25 Information Side of Sliding Card (Gleim E6B) 9.26 Electronic Flight Computers 9.27 ASA CX-2 9.28 Sporty’s E6B	9.1 Sectional Charts 9.2 IFR En Route Low Altitude Charts 9.3 Instrument Approach Charts 9.4 Fuel Consumption 9.5 Wind Direction and Speed 9.6 Time, Compass Heading, Etc., on Climbs and En Route 9.7 Time, Compass Heading, Etc., on Descents

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 9, “Navigation: Charts, Publications, Flight Computers,” of *Commercial Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>Pilot Handbook</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____

Notes:

GROUND LESSON 10: NAVIGATION SYSTEMS

Objective

To further develop the pilot’s knowledge of various navigation systems.

Text References

Pilot Handbook, Study Unit 10, “Navigation Systems”
Commercial Pilot FAA Knowledge Test Prep, Study Unit 10, “Navigation Systems”

<i>Pilot Handbook</i> Study Unit 10 Contents	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 10 Contents
10.1 Characteristics of Radio Waves 10.2 VHF Omnidirectional Range (VOR) 10.3 Distance-Measuring Equipment (DME) 10.4 Automatic Direction Finder (ADF) 10.5 Radio Magnetic Indicator (RMI) 10.6 Area Navigation (RNAV) 10.7 VORTAC-Based RNAV 10.8 Global Positioning System (GPS)	10.1 VOR Use and Receiver Checks 10.2 Horizontal Situation Indicator (HSI) 10.3 Global Positioning System (GPS)

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 10, “Navigation Systems,” of *Commercial Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>Pilot Handbook</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____

Notes:

GROUND LESSON 11: FLIGHT OPERATIONS

Objective

To further develop the pilot’s knowledge of maneuvers, procedures, and emergency operations.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep
Commercial Pilot FAA Knowledge Test Prep, Study Unit 11, “Flight Operations”

<i>Commercial Pilot Flight Maneuvers</i> Reading Assignment	Study Unit	<i>Commercial Pilot FAA Knowledge Test Prep</i> Study Unit 11 Contents
Weather Information	5	11.1 Flight Fundamentals
Operation of Systems	9	11.2 Taxiing
Taxiing	14	11.3 Landings
Normal Takeoff and Climb	18	11.4 Emergencies
Normal Approach and Landing	19	11.5 Anti-Collision Light System
Diversion	33	11.6 Cold Weather Operation
Systems and Equipment Malfunction	44	11.7 Turbulence
		11.8 Night Flying Operations

Completion Standards

The lesson will have been successfully completed when the pilot answers the questions in Study Unit 11, “Flight Operations,” of *Commercial Pilot FAA Knowledge Test Prep*, FAA Test Prep Online, and/or Online Ground School with a minimum passing grade of 80%.

	Dates Studied	Date Completed
<i>Commercial Pilot Flight Maneuvers</i>	_____	_____
<i>Commercial Pilot FAA Knowledge Test Prep</i>	_____	_____

Notes:

STAGE TWO KNOWLEDGE TEST

Objective

To evaluate the pilot's understanding of the material presented during Ground Lesson 6 through Ground Lesson 11. The Stage Two knowledge test consists of 25 questions on pages 130-131.

Content

<u>Lesson</u>	(Lessons 1-5 were Stage One.)
6	Aeromedical Factors and Aeronautical Decision Making (ADM)
7	Aviation Weather
8	Aviation Weather Services
9	Navigation: Charts, Publications, Flight Computers
10	Navigation Systems
11	Flight Operations

Completion Standards

This lesson will have been successfully completed when the pilot has completed the Stage Two knowledge test with a minimum passing grade of 80%.

END-OF-COURSE KNOWLEDGE TEST

Objective

To evaluate the pilot's comprehension of the material covered in the ground training course (lessons 1-11) and to determine the pilot's readiness to take the FAA commercial pilot (airplane) knowledge test. The end-of-course knowledge test consists of 100 questions on pages 132-140.

Content

Practice Commercial Pilot Knowledge Test

Completion Standards

The lesson will have been successfully completed when the pilot has completed the practice commercial pilot (airplane) knowledge test with a minimum passing grade of 80%.

PART I: COMMERCIAL PILOT FLIGHT TRAINING SYLLABUS AIRPLANE SINGLE-ENGINE LAND

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FLIGHT TRAINING COURSE OBJECTIVES

The pilot will obtain the aeronautical knowledge and experience and demonstrate the flight proficiency necessary to meet the requirements for a commercial pilot certificate with an airplane category rating and single-engine land class rating.

FLIGHT TRAINING COURSE COMPLETION STANDARDS

The pilot will demonstrate through the stage checks and school records that (s)he has the necessary flight proficiency and aeronautical experience to obtain a commercial pilot certificate with an airplane category rating and single-engine class rating.

The following is a brief description of the parts of each flight lesson in this syllabus:

Objective: We open each lesson with an objective, usually a sentence or two, to help you gain perspective and understand the goal for that particular lesson.

Text References: For lessons with new learning items, this section tells you which reference books you will need to study or refer to while mastering the tasks within the lesson. Abbreviations are given to facilitate the cross-referencing process.

Content: Each lesson contains a list of the tasks required to be completed before moving to the next lesson. A task may be listed as a “review item” (a task that was covered in a previous lesson) or as a “new item” (a task that is introduced to you for the first time). Items that include “**IR**” should be accomplished by reference to instruments only. Each task is preceded by three blank “checkoff” boxes, which may be used by your CFI to keep track of your progress and to indicate that each task was completed.

There are three boxes because it may take more than one flight to complete the lesson. Your CFI may mark the box(es) next to each task in one of the following methods (or any other method desired):

✓ - task completed to lesson completion standards	D - demonstrated by instructor A - accomplished by you S - safe/satisfactory C - meets or exceeds ACS standards	1 - above lesson standard 2 - meets lesson standard 3 - below lesson standard
---	--	---

The last task in each flight lesson is labeled “Additional items at CFI’s discretion,” and is followed by several blank lines. This area can be used to record any extra items that your CFI feels are appropriate to the lesson, taking into account such variables as weather, local operational considerations, and your progress as a student.

NOTE: CFIs are reminded not to limit themselves to the blank lines provided—use as much of the page as you need.

Completion Standards: Based on these standards, your CFI determines how well you have met the objective of the lesson in terms of knowledge and skill.

Instructor’s Comments and Lesson Assignment: Space is provided for your CFI’s critique of the lesson, which you can refer to later. Your instructor may also write any specific assignment for the next lesson.

Reading Assignments for Flight Lessons

You are expected to be prepared for each flight lesson. Our reading assignments include text references for new tasks to help you understand what is going to happen and how and why you need to do everything **before** you go to the airport.

Next to each new item in the **Content** section, we provide study unit-level references to read in *Commercial Pilot Flight Maneuvers and Practical Test Prep* (FM) and/or *Pilot Handbook* (PH) and the section to read, if appropriate, in your airplane’s Pilot’s Operating Handbook (POH). You can make use of the comprehensive index in the Gleim books if you need to analyze specific task element-level details.

Study Tips

- As you read the material, attempt to understand the basic concepts.
- Try to anticipate and visualize the concepts and flight maneuvers.
- With this basic knowledge, your CFI can expand on the specific and finer points, especially when explaining how a task is done in your specific airplane.
- After your flight lesson, task items are fresh in your mind; they will make sense, and you should be able to understand and learn more.
- Study review items so you can explain them to your CFI and your examiner.
- After you study, relax and plan a time to begin preparing for the next flight lesson.

STAGE ONE**Stage One Objective**

The pilot will obtain the knowledge and skill required to safely operate a complex airplane and receive a complex airplane logbook endorsement (if applicable). Additionally, the pilot will be introduced to commercial flight maneuvers.

Stage One Completion Standards

The stage will be completed when the pilot demonstrates proficiency in the operation of a complex airplane, receives a complex airplane logbook endorsement (if applicable), and satisfactorily passes the Stage One check.

<u>Lesson</u>	<u>Topic</u>
1	Traffic Pattern Operations
2	Slow Flight, Stalls, and Emergency Operations
3	Solo Practice
4	Maneuvers Review
5	Introduction to Complex Airplanes
6	Complex Airplane--Slow Flight and Stalls
7	Complex Airplane--Emergency Operations
8	Complex Airplane--Night Operations
9	Solo Practice
10	Introduction to Performance Maneuvers
11	Introduction to Eights-on-Pylons
12	Solo Practice
13	Solo Practice
14	Maneuvers Review
15	Complex Airplane--Maneuvers Review
16	Solo Practice
17	Stage One Check--Complex Airplane

FLIGHT LESSON 1: TRAFFIC PATTERN OPERATIONS

FSTD/ATD option

Objective

To introduce the pilot to the listed tasks with emphasis on traffic pattern operations.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Pilot's Operating Handbook (POH)

Content

1. Preflight briefing

2. New items

- Pilot qualifications - FM 3
- Airworthiness requirements - FM 4
- Operation of systems - FM 9; POH 1, 7, 8, 9
- Aeromedical factors - FM 10
- Preflight inspection - FM 11; POH 4
- Flight deck management - FM 12
- Engine starting - FM 13; POH 4
- Taxiing - FM 14
- Runway incursion avoidance - FM 14
- Before-takeoff check - FM 15; POH 4
- Radio communications and ATC light signals - FM 16
- Traffic patterns - FM 17
 - Runway incursion and collision avoidance - FM 14
 - Wake turbulence - FM 17
 - Wind shear avoidance - FM 17
- Airport, runway, and taxiway signs, markings, and lighting - FM 14
- Normal and crosswind takeoff and climb - FM 18; POH 4
- Normal and crosswind approach and landing - FM 19; POH 4
- Short-field takeoff and maximum performance climb - FM 22; POH 4
- Short-field approach and landing - FM 23; POH 4
- Power-off 180° accuracy approach and landing - FM 24
- Emergency approach and landing (simulated) - FM 43; POH 3
- After landing, parking, and securing - FM 46; POH 4
- Additional items at CFI's discretion _____

3. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates at least a private pilot skill level in the assigned tasks, with the exception of a power-off 180° approach and landing. The pilot will demonstrate understanding of the techniques required to perform power-off accuracy approaches and landings.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 2: SLOW FLIGHT, STALLS, AND EMERGENCY OPERATIONS

FSTD/ATD option

Objective

To introduce the pilot to slow flight, stalls, and emergency operations.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)

Pilot Handbook (PH)

Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 1 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items
 - Radio communications and ATC light signals
 - Traffic patterns
 - Runway incursion avoidance
 - Emergency approach and landing (simulated)

4. New items
 - Aeronautical decision making (ADM) - PH 6
 - Soft-field takeoff and climb - FM 20; POH 4
 - Soft-field approach and landing - FM 21; POH 4
 - Go-around/rejected landing - FM 25; POH 4
 - Maneuvering during slow flight - FM 35
 - Power-off stalls - FM 36; PH 1
 - Power-on stalls - FM 37; PH 1
 - Accelerated stalls - FM 38; PH 1
 - Spin awareness - FM 39; POH 2
 - Emergency descent - FM 42; POH 3
 - Systems and equipment malfunctions - FM 44; POH 3, 9
 - Emergency equipment and survival gear - FM 45; POH 7, 9
 - Straight-and-level (IR) - CFI
 - Constant airspeed climbs and descents (IR) - CFI
 - Turns to a heading (IR) - CFI
 - Recovery from unusual flight attitudes (IR) - CFI
 - Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates at least a private pilot skill level in the assigned tasks.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 5: INTRODUCTION TO COMPLEX AIRPLANES

Objective

To familiarize the pilot with the complex airplane, its operating characteristics, the flight deck controls, and the instruments and systems. The pilot will be introduced to preflight and postflight procedures, the use of checklists, and the safety precautions to be followed.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
 Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 4 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. New items
 - Pilot qualifications - FM 3
 - Airworthiness requirements - FM 4
 - Minimum equipment list (MEL) - FM 4; CFI
 - Performance and limitations - FM 8; POH 2, 5, 6
 - Operation of systems - FM 9; POH 1, 7, 8, 9
 - Supplemental oxygen - FM 40; POH 7, 8
 - Pressurization - FM 41; POH 7
 - Use of checklists - FM 12; POH 4
 - Preflight inspection - FM 11; POH 4
 - Flight deck management - FM 12
 - Engine starting - FM 13; POH 4
 - Taxiing - FM 14
 - Runway incursion avoidance - FM 14
 - Before-takeoff check - FM 15; POH 4
 - Normal and crosswind takeoff and climb - FM 18; POH 4
 - Normal and crosswind approach and landing - FM 19; POH 4
 - Traffic patterns - FM 17
 - After landing, parking, and securing - FM 46; POH 4
 - Additional items at CFI's discretion _____
4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot displays an understanding of the airplane's systems, preflight procedures, and postflight procedures. The pilot will be able to demonstrate at least a private pilot skill level during the flight operations. Additionally, the pilot will display an understanding of supplemental oxygen requirements and pressurization systems and controls even if these items are not applicable to the complex airplane being flown.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 6: COMPLEX AIRPLANE--SLOW FLIGHT AND STALLS

Objective

To improve the pilot's proficiency in the operation of a complex airplane and to introduce slow flight, stalls, short-field takeoffs and landings, and power-off 180° accuracy approaches and landings.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Pilot Handbook (PH)
 Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 5 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items
 - Operation of systems
 - Supplemental oxygen
 - Pressurization
 - Use of checklists
 - Preflight inspection
 - Flight deck management
 - Engine starting
 - Taxiing
 - Runway incursion avoidance
 - Before-takeoff check
 - After landing, parking, and securing

4. New items
 - Short-field takeoff and maximum performance climb - FM 22; POH 4
 - Short-field approach and landing - FM 23; POH 4
 - Power-off 180° accuracy approach and landing - FM 24
 - Maneuvering during slow flight - FM 35
 - Power-off stalls - FM 36; PH 1
 - Power-on stalls - FM 37; PH 1
 - Accelerated stalls - FM 38; PH 1
 - Spin awareness - FM 39; POH 2
 - Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot displays an increased proficiency in the operation of a complex airplane. During this and subsequent flights, the pilot will perform the preflight inspection, engine starting, taxiing, the before-takeoff check, and the postflight procedures without instructor assistance. The pilot will be able to demonstrate an understanding of short-field takeoffs and landings, power-off accuracy approaches and landings, slow flight, and stalls (including the proper recovery procedures).

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 7: COMPLEX AIRPLANE--EMERGENCY OPERATIONS**Objective**

To improve the pilot's proficiency in the operation of a complex airplane and to introduce emergency operations and soft-field takeoffs and landings.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 6 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items
 - Operation of systems
 - Short-field takeoff and maximum performance climb
 - Short-field approach and landing
 - Power-off 180° accuracy approach and landing
 - Maneuvering during slow flight
 - Power-off stalls
 - Power-on stalls
 - Accelerated stalls
 - Spin awareness

4. New items
 - Soft-field takeoff and climb - FM 20; POH 4
 - Soft-field approach and landing - FM 21; POH 4
 - Go-around/rejected landing - FM 25; POH 4
 - Emergency descent - FM 42; POH 3
 - Emergency approach and landing (simulated) - FM 43; POH 3
 - Systems and equipment malfunctions - FM 44; POH 3, 9
 - Emergency equipment and survival gear - FM 45; POH 7, 9
 - Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot displays proficiency in short-field takeoffs and landings, power-off accuracy approaches and landings, slow flight, and recovery from stalls. Additionally, the pilot will display an understanding of emergency procedures, go-arounds, and soft-field takeoffs and landings.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 8: COMPLEX AIRPLANE--NIGHT OPERATIONS

Objective

To introduce the pilot to night-flying preparation and night-flying operations to the commercial pilot skill level. Additionally, the pilot will demonstrate the necessary skills and proficiency to act as pilot in command of a complex airplane.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Pilot Handbook (PH)
 Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 7 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. New items (night operations)
 - Operation of systems - FM 9; POH 1, 7, 8, 9
 - Performance and limitations - FM 8; POH 2, 5, 6
 - Aeromedical factors - FM 10
 - Physiological aspects of night flying - CFI
 - Lighting and equipment for night flight - CFI
 - Preflight inspection - FM 11; POH 4
 - Radio communications and ATC light signals - FM 16
 - Traffic patterns - FM 17
 - Airport, runway, and taxiway signs, markings, and lighting - FM 14
 - Runway incursion avoidance - FM 14
 - Soft-field takeoff and climb - FM 20; POH 4
 - Soft-field approach and landing - FM 21; POH 4
 - Short-field takeoff and maximum performance climb - FM 22; POH 4
 - Short-field approach and landing - FM 23; POH 4
 - Go-around/rejected landing - FM 25; POH 4
 - Maneuvering during slow flight - FM 35
 - Power-off stalls - FM 36; PH 1
 - Power-on stalls - FM 37; PH 1
 - Accelerated stalls - FM 38; PH 1
 - Emergency descent - FM 42; POH 3
 - Emergency approach and landing (simulated) - FM 43; POH 3
 - Systems and equipment malfunctions - FM 44; POH 3, 9
 - Additional items at CFI's discretion _____
4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates proficiency in the operation of a complex airplane as pilot in command. The pilot will be able to maintain the desired altitude, ± 100 ft.; airspeed, ± 10 kt.; and heading, $\pm 10^\circ$.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 14: MANEUVERS REVIEW

FSTD/ATD option

Objective

To review procedures and maneuvers covered previously.

Content

- 1. Flight Lesson 13 complete? Yes ____ Copy of lesson placed in pilot’s folder? Yes ____
- 2. Preflight briefing
- 3. Review items

- Radio communications and ATC light signals
- Traffic patterns
- Airport, runway, and taxiway signs, markings, and lighting
- Runway incursion avoidance
- Soft-field takeoff and climb
- Soft-field approach and landing
- Short-field takeoff and maximum performance climb
- Short-field approach and landing
- Power-off 180° accuracy approach and landing
- Go-around/rejected landing
- Steep turns
- Steep spirals
- Chandelles
- Lazy eights
- Eights-on-pylons
- Maneuvering during slow flight
- Power-off stalls
- Power-on stalls
- Accelerated stalls
- Straight-and-level (IR)
- Constant airspeed climbs and descents (IR)
- Turns to a heading (IR)
- Recovery from unusual attitudes (IR)
- Additional items at CFI’s discretion _____

- 4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an increase in proficiency in each maneuver. The pilot will be able to maintain the desired altitude, ±100 ft.; airspeed, ±10 kt.; and heading, ±10°. During the takeoffs, the pilot will be able to maintain V_X , +10/–0 kt., and V_Y , ±5 kt., as appropriate. During the approach for a landing, the pilot will be able to maintain the recommended airspeed, ±5 kt.

Instructor’s comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 15: COMPLEX AIRPLANE--MANEUVERS REVIEW

Objective

To review procedures and maneuvers covered previously in a complex airplane.

Content

- 1. Flight Lesson 14 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
- 2. Preflight briefing
- 3. Review items

- Pilot qualifications
- Airworthiness requirements
 - Minimum equipment list (MEL)
- Performance and limitations
 - Operations at maximum takeoff weight
 - High density altitude operations
- Operation of systems
- Supplemental oxygen
- Pressurization
- Aeromedical factors
- Aeronautical decision making (ADM)
- Traffic patterns
- Soft-field takeoff and climb
- Soft-field approach and landing
- Short-field takeoff and maximum performance climb
- Short-field approach and landing
- Power-off 180° accuracy approach and landing
- Go-around/rejected landing
- Emergency descent
- Emergency approach and landing (simulated)
- Systems and equipment malfunctions
- Maneuvering during slow flight
- Power-off stalls
- Power-on stalls
- Accelerated stalls
- Spin awareness
- Additional items at CFI's discretion _____

- 4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an increase in proficiency in each maneuver while operating a complex airplane. While maneuvering during slow flight, the pilot will be able to maintain the desired airspeed, +5/-0 kt.; specified altitude, ±100 ft.; heading, ±10°; specified bank angle, ±10°, during turning flight; and roll out on the specified heading, ±10°.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 17: STAGE ONE CHECK--COMPLEX AIRPLANE

Objective

During this stage check, an authorized flight instructor will evaluate the pilot’s proficiency in a complex airplane.

Content

- 1. Flight Lesson 16 complete? Yes ____ Copy of lesson placed in pilot’s folder? Yes ____
- 2. Preflight briefing
- 3. Stage check tasks

- Pilot qualifications
- Airworthiness requirements
- Minimum equipment list (MEL)
- Performance and limitations
- Operation of systems
- Supplemental oxygen
- Pressurization
- Aeromedical factors
- Aeronautical decision making (ADM)
- Preflight inspection
- Flight deck management
- Runway incursion avoidance
- Soft-field takeoff and climb
- Soft-field approach and landing
- Short-field takeoff and maximum performance climb
- Short-field approach and landing
- Power-off 180° accuracy approach and landing
- Go-around/rejected landing
- Maneuvering during slow flight
- Power-off stalls
- Power-on stalls
- Accelerated stalls
- Straight-and-level (IR)
- Constant airspeed climbs and descents (IR)
- Turns to a heading (IR)
- Recovery from unusual attitudes (IR)
- Emergency descent
- Emergency approach and landing (simulated)
- Systems and equipment malfunctions
- After landing, parking, and securing
- Additional items at CFI’s discretion _____

- 4. Postflight critique and preview of next lesson

Completion Standards

The lesson and Stage One will have been successfully completed when the pilot can demonstrate proficiency in the operation and systems of the complex airplane and receive a complex airplane logbook endorsement (if applicable). While maneuvering during slow flight, the pilot will be able to maintain the desired airspeed, +5/–0 kt. While performing all maneuvers, the pilot will be able to maintain the specified altitude, ±100 ft.; heading, ±10°; specified bank angle, ±10°, during turning flight; and roll out on the specified heading, ±10°.

Instructor’s comments: _____

Lesson assignment: _____

Notes: _____

STAGE TWO**Stage Two Objective**

The pilot will increase his or her skill and proficiency in both day and night cross-country operations.

Stage Two Completion Standards

The stage will be completed when the pilot demonstrates the ability to plan and conduct cross-country flights in an airplane while operating under day and night conditions using pilotage, dead reckoning, and navigation systems and satisfactorily passes the Stage Two check.

<u>Lesson</u>	<u>Topic</u>
18	Maneuvers Review
19	Dual Cross-Country
20	Night Flight--Local
21	Dual Night Cross-Country
22	Solo Night--Local
23	Solo Night Cross-Country
24	Solo Cross-Country
25	Instrument Review
26	Solo Cross-Country
27	Solo Cross-Country
28	Solo Night--Local
29	Solo Cross-Country
30	Solo Cross-Country
31	Maneuvers Review
32	Solo Cross-Country
33	Solo Cross-Country
34	Stage Two Check

FLIGHT LESSON 18: MANEUVERS REVIEW

FSTD/ATD option

Objective

To review procedures and maneuvers covered previously.

Content

1. Flight Lesson 17 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items
 - Short-field takeoff and maximum performance climb
 - Short-field approach and landing
 - Power-off 180° accuracy approach and landing
 - Collision avoidance procedures
 - Wake turbulence avoidance
 - Go-around/rejected landing
 - Maneuvering during slow flight
 - Power-off stalls
 - Power-on stalls
 - Accelerated stalls
 - Spin awareness
 - Emergency descent
 - Emergency approach and landing (simulated)
 - Straight-and-level (IR)
 - Maneuvering during slow flight (IR)
 - Power-off stall (IR)
 - Power-on stall (IR)
 - Constant airspeed climbs and descents (IR)
 - Turns to a heading (IR)
 - Additional items at CFI's discretion _____
4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an increase in proficiency in each maneuver. The pilot will be able to maintain the desired altitude, ±100 ft.; airspeed, ±10 kt.; and heading, ±10°. Additionally, during the short-field takeoff and climb, the pilot will be able to maintain V_X , +10/-0 kt., and V_Y , ±10 kt.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 19: DUAL CROSS-COUNTRY

Objective

To introduce the pilot to planning and executing a daytime cross-country flight to the commercial pilot skill level. This flight must be at least 2 hours in duration, a total straight-line distance of more than 100 NM from the original point of departure, and occur in daytime conditions.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Pilot Handbook (PH)

Content

1. Flight Lesson 18 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Pilot qualifications <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Performance and limitations <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Aeromedical factors <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Aeronautical decision making (ADM) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Flight deck management <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Radio communications and ATC light signals <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Airport, runway, and taxiway signs, markings, and lighting <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Runway incursion avoidance <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field takeoff and climb <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field approach and landing	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field takeoff and maximum performance climb <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field approach and landing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Systems and equipment malfunctions <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Straight-and-level (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Constant airspeed climbs and descents (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Turns to a heading (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Recovery from unusual attitudes (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Partial panel flying (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Intercepting and tracking navigational systems (IR)
---	--
4. New items

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Weather information - FM 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Cross-country flight planning - FM 6 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> National Airspace System - FM 7 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Open a flight plan - CFI <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Pilotage and dead reckoning - FM 31 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Magnetic compass turns - PH 2 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Navigation systems - FM 32; PH 10 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ATC radar services - PH 3 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Diversion - FM 33 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Lost procedures - FM 34 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Closing a flight plan - CFI <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Additional items at CFI's discretion	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> _____
--	--
5. Postflight critique and preview of next lesson

NOTE: This lesson may be completed under VFR or IFR at the discretion of the flight instructor and/or chief flight instructor, as appropriate.

Completion Standards

The lesson will have been successfully completed when the pilot is able to plan and conduct a daytime cross-country flight. The pilot will be able to maintain altitude, ± 100 ft.; heading, $\pm 10^\circ$; and the desired airspeed, ± 10 kt. Additionally, the pilot will be able to verify the airplane's position within 2 NM of the flight planned route at all times.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 20: NIGHT FLIGHT--LOCAL

Objective

To increase the pilot's experience and proficiency in night operations.

Content

- 1. Flight Lesson 19 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
- 2. Preflight briefing
- 3. Review items

- Physiological aspects of night flying
- Lighting and equipment for night flight
- Airport, runway, and taxiway signs, markings, and lighting
- Preflight inspection
- Flight deck management
- Engine starting
- Taxiing
- Runway incursion avoidance
- Before-takeoff check
- Radio communications and ATC light signals
- Normal and crosswind takeoff and climb
- Short-field takeoff and maximum performance climb
- Short-field approach and landing
- Traffic patterns
- Go-around/rejected landing
- Collision and runway incursion avoidance procedures
- Maneuvering during slow flight
- Power-off stalls
- Power-on stalls
- Accelerated stalls
- Emergency approach and landing (simulated)
- Systems and equipment malfunctions
- Emergency descent
- Normal and crosswind approach and landing
- Power-off 180° accuracy approach and landing
- Straight-and-level (IR)
- Constant airspeed climbs and descents (IR)
- Turns to a heading (IR)
- Recovery from unusual attitudes (IR)
- After landing, parking, and securing
- Additional items at CFI's discretion _____

- 4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates the knowledge of night flying preparation, precautions, and procedures. The pilot will be able to maintain the desired altitude, ±100 ft.; airspeed, ±10 kt.; and heading, ±10°.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 21: DUAL NIGHT CROSS-COUNTRY

Objective

To introduce the pilot to planning and executing a nighttime cross-country flight to the commercial pilot skill level. This flight must be at least 2 hours in duration, a total straight-line distance of more than 100 NM from the original point of departure, and occur in nighttime conditions.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Pilot Handbook (PH)
 Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 20 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items

- | | |
|---|--|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Physiological aspects of night flying | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field approach and landing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Lighting and equipment for night flight | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Go-around/rejected landing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Performance and limitations | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Collision and runway incursion avoidance procedures |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Airport, runway, and taxiway signs, markings, and lighting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Straight-and-level (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Runway incursion avoidance | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Constant airspeed climbs and descents (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Preflight inspection | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Turns to a heading (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Recovery from unusual attitudes (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Partial panel flying (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Intercepting and tracking navigational systems (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> After landing, parking, and securing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field takeoff and maximum performance climb | |

4. New items (night operations)
 - Weather information - FM 5
 - Cross-country flight planning - FM 6
 - Pilotage and dead reckoning - FM 31
 - Navigation systems and radar services - FM 32; PH 10
 - Magnetic compass turns - PH 2
 - Diversion - FM 33
 - Lost procedures - FM 34
 - Emergency equipment and survival gear - FM 45; POH 7, 9
 - Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

NOTE: This lesson may be completed under VFR or IFR at the discretion of the flight instructor and/or chief flight instructor, as appropriate.

Completion Standards

This lesson will have been successfully completed when the pilot is able to plan and conduct a nighttime cross-country flight. The pilot will be able to maintain altitude, ± 100 ft.; heading, $\pm 10^\circ$; and the desired airspeed, ± 10 kt. Additionally, the pilot will be able to verify the airplane's position within 2 NM of the flight planned route at all times.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 28: SOLO NIGHT--LOCAL**Objective**

To provide the pilot with experience with night operations and increase the pilot's proficiency when operating in these conditions.

Content

1. Flight Lesson 27 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Weather information |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Aeromedical factors |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Physiological aspects of night flying |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Lighting and equipment for night flight |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Traffic patterns |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Normal and crosswind takeoff and climb |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Normal and crosswind approach and landing |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Short-field takeoff and maximum performance climb |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Short-field approach and landing |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Power-off stalls |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Power-on stalls |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Additional items at CFI's discretion _____ |

4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot completes the listed maneuvers assigned for this solo night flight. With this flight lesson being the last solo night flight, the pilot is required to have at least 5 hr. of solo flight time in nighttime conditions with 10 takeoffs and landings (each involving a flight with a traffic pattern) at an airport with an operating control tower.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 31: MANEUVERS REVIEW

FSTD/ATD option

Objective

To review procedures and maneuvers covered previously. Additionally, the pilot will plan and depart on a VFR cross-country flight so the instructor can evaluate the pilot’s proficiency with basic navigation, lost procedures, and diversion to an alternate airport.

Content

1. Flight Lesson 30 complete? Yes ____ Copy of lesson placed in pilot’s folder? Yes ____

2. Preflight briefing

3. Review items

- Weather information
- Cross-country flight planning
- Performance and limitations
- Operation of systems
- Traffic patterns
- Normal and crosswind takeoff and climb
- Normal and crosswind approach and landing
- Soft-field takeoff and climb
- Soft-field approach and landing
- Short-field takeoff and maximum performance climb
- Short-field approach and landing
- Power-off 180° accuracy approach and landing
- Go-around/rejected landing
- Pilotage and dead reckoning
- Magnetic compass turns
- Diversion
- Lost procedures
- Straight-and-level (IR)
- Constant airspeed climbs and descents (IR)
- Turns to a heading (IR)
- Recovery from unusual attitudes (IR)
- Emergency descent
- Emergency approach and landing (simulated)
- Systems and equipment malfunctions
- Emergency equipment and survival gear
- Additional items at CFI’s discretion _____

4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates increased proficiency in planning and flying a VFR cross-country flight. The pilot will be able to maintain the desired altitude, ±100 ft.; airspeed, ±10 kt.; and heading, ±10°, and verify the airplane’s position within 2 NM of the flight planned route at all times.

Instructor’s comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 34: STAGE TWO CHECK

Objective

During this stage check, an authorized instructor will determine if the pilot is proficient in planning and conducting daytime and nighttime cross-country flights at the commercial pilot skill level.

Content

- 1. Flight Lesson 33 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
- 2. Preflight briefing
- 3. Stage check tasks

- Weather information
- Cross-country flight planning
- National Airspace System
- Performance and limitations
- Aeronautical decision making (ADM)
- Flight deck management
- Radio communications and ATC light signals
- Runway incursion avoidance
- Traffic patterns
- Airport, runway, and taxiway signs, markings, and lighting
- Soft-field takeoff and climb
- Soft-field approach and landing
- Short-field takeoff and maximum performance climb
- Short-field approach and landing
- Pilotage and dead reckoning
- Magnetic compass turns
- Navigation systems and radar services
- Diversion
- Lost procedures
- Physiological aspects of night flying
- Lighting and equipment for night flight
- Systems and equipment malfunctions
- Postflight procedures
- Additional items at CFI's discretion _____

- 4. Postflight critique and preview of next lesson

Completion Standards

The lesson and Stage Two will have been successfully completed when the pilot can demonstrate proficiency in cross-country planning and flight procedures in daytime and nighttime conditions. The flight does not have to take place at night. The pilot may demonstrate understanding of night flight considerations in lieu of conducting the flight at night. The pilot will be able to maintain the desired altitude, ±100 ft.; airspeed, ±10 kt.; and heading, ±10°, and verify the airplane's position within 2 NM of the flight planned route at all times.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

STAGE THREE**Stage Three Objective**

To provide the pilot with the instruction and practice necessary to attain the skill level required to pass the commercial pilot airplane (single-engine land) practical test.

Stage Three Completion Standards

The stage will be completed when the pilot demonstrates proficiency in all of the tasks of the commercial pilot airplane (single-engine land) practical test, meets or exceeds the minimum acceptable standards for the commercial pilot certificate, and satisfactorily passes the Stage Three check.

<u>Lesson</u>	<u>Topic</u>
35	Complex Airplane--Performance Maneuvers
36	Complex Airplane--Eights-on-Pylons
37	Solo Practice
38	Solo Practice
39	Maneuvers Review
40	Maneuvers Review
41	Solo Practice
42	Solo Practice
43	Complex Airplane--Maneuvers Review
44	Solo Practice
45	Maneuvers Review
46	Solo Practice
47	Maneuvers Review
48	Maneuvers Review
49	Solo Practice
50	Solo Practice
51	Complex Airplane--Maneuvers Review
52	Solo Practice
53	Maneuvers Review
54	Dual Cross-Country
55	Solo Practice
56	Maneuvers Review
57	Solo Practice
58	Complex Airplane--Maneuvers Review
59	Stage Three Check--Complex Airplane
60	End-of-Course Check--Complex Airplane

FLIGHT LESSON 36: COMPLEX AIRPLANE--EIGHTS-ON-PYLONS

Objective

To review procedures and maneuvers covered previously. Additionally, the pilot will be introduced to eights-on-pylons and basic attitude instrument flight in a complex airplane.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)

Content

1. Flight Lesson 35 complete? Yes ____ Copy of lesson placed in pilot’s folder? Yes ____
2. Preflight briefing
3. Review items
 - Operation of systems
 - Supplemental oxygen
 - Pressurization
 - Aeromedical factors
 - Short-field takeoff and maximum performance climb
 - Short-field approach and landing
 - Power-off 180° accuracy approach and landing
 - Go-around/rejected landing
 - Chandelles
 - Lazy eights
 - Systems and equipment malfunctions

4. New items
 - Eights-on-pylons - FM 30
 - Straight-and-level (IR) - CFI
 - Turns to a heading (IR) - CFI
 - Recovery from unusual flight attitudes (IR) - CFI
 - Constant airspeed climbs and descents (IR) - CFI
 - Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an understanding of performing eights-on-pylons in the complex airplane. Additionally, the pilot’s proficiency in chandelles and lazy eights will increase. The pilot will be able to maintain V_x , +10/-0 kt. until clearing the obstacles during the short-field takeoff, then maintain V_y , ±5 kt. During the short-field and power-off accuracy approaches and landings, the pilot will be able to maintain the recommended approach airspeed (with gust factors applied), ±5 kt., and touch down at or within 200 ft. beyond a specific point.

Instructor’s comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 43: COMPLEX AIRPLANE--MANEUVERS REVIEW

Objective

To review procedures and maneuvers covered previously and to identify areas where additional practice is necessary.

Content

1. Flight Lesson 42 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Performance and limitations	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Chandelles
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Operation of systems	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Lazy eights
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Preflight inspection	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Eights-on-pylons
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Flight deck management	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Maneuvering during slow flight
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Engine starting	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Power-off stalls
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Taxiing	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Power-on stalls
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Runway incursion avoidance	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Accelerated stalls
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Before-takeoff check	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Spin awareness
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Traffic patterns	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Emergency descent
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Normal and crosswind takeoff and climb	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Emergency approach and landing (simulated)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Normal and crosswind approach and landing	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Systems and equipment malfunctions
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Soft-field takeoff and climb	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Attitude instrument flying (IR)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Soft-field approach and landing	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Partial panel flying (IR)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Short-field takeoff and maximum performance climb	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Intercepting and tracking navigation systems (IR)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Short-field approach and landing	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Recovery from unusual flight attitudes (IR)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Power-off 180° accuracy approach and landing	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	After landing, parking, and securing
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Go-around/rejected landing	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Additional items at CFI's discretion _____
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Steep turns		
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Steep spirals		

4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an increased knowledge of the complex airplane systems and flight characteristics. Additionally, the pilot will demonstrate a good understanding of the correct procedures in all of the listed tasks. The pilot will be able to maintain the desired altitude, ± 100 ft.; airspeed, ± 10 kt.; and heading, $\pm 10^\circ$. During takeoffs and landings, the pilot will be able to maintain V_Y , ± 5 kt.; V_X , $+5/-0$ kt.; and the recommended approach airspeed (with gust factors applied), ± 5 kt.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 45: MANEUVERS REVIEW

FSTD/ATD option

Objective

To review procedures and maneuvers covered previously.

Content

- 1. Flight Lesson 44 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
- 2. Preflight briefing
- 3. Review items
 - Soft-field takeoff and climb
 - Soft-field approach and landing
 - Short-field takeoff and maximum performance climb
 - Short-field approach and landing
 - Power-off 180° accuracy approach and landing
 - Go-around/rejected landing
 - Steep turns
 - Steep spirals
 - Chandelles
 - Lazy eights
 - Eights-on-pylons
 - Emergency approach and landing (simulated)
 - Additional items at CFI's discretion _____

- 4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an understanding of the correct procedures (entry, performance, and recovery) in each of the assigned maneuvers.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 51: COMPLEX AIRPLANE--MANEUVERS REVIEW

Objective

To review procedures and maneuvers covered previously.

Content

1. Flight Lesson 50 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Operation of systems |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Supplemental oxygen |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Pressurization |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Aeromedical factors |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Aeronautical decision making (ADM) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Use of checklists |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Normal and crosswind takeoff and climb |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Normal and crosswind approach and landing |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Soft-field takeoff and climb |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Soft-field approach and landing |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Short-field takeoff and maximum performance climb |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Short-field approach and landing |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Power-off 180° accuracy approach and landing |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Traffic patterns |
| | <input type="checkbox"/> | <input type="checkbox"/> | Wake turbulence avoidance |
| | <input type="checkbox"/> | <input type="checkbox"/> | Runway incursion and collision avoidance |
| | <input type="checkbox"/> | <input type="checkbox"/> | Wind shear avoidance |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Go-around/rejected landing |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Steep turns |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Steep spirals |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Chandelles |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Lazy eights |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Eights-on-pylons |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Emergency descent |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Emergency approach and landing (simulated) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Systems and equipment malfunctions |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Additional items at CFI's discretion _____ |

4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an understanding of the assigned procedures and maneuvers. The pilot will complete each task to the minimum standards listed in the current FAA Commercial Pilot Airman Certification Standards. Those procedures and maneuvers not meeting the commercial standards will be thoroughly explained by the instructor and assigned for additional practice in the next lesson.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 54: DUAL CROSS-COUNTRY

Objective

To re-evaluate the pilot's ability to conduct a cross-country flight for the purpose of ensuring the pilot meets the minimum standards required by the current FAA Commercial Pilot Airman Certification Standards. At a minimum, this flight will include a landing at an airport that is a straight-line distance of more than 50 NM from the original point of departure.

Content

- | | | |
|----|---|--|
| 1. | Flight Lesson 53 complete? Yes ____ | Copy of lesson placed in pilot's folder? Yes ____ |
| 2. | Preflight briefing | |
| 3. | Review items | |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Pilot qualifications | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field takeoff and climb |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Airworthiness requirements | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field approach and landing |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Minimum equipment list (MEL) | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field takeoff and maximum performance climb |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Cross-country flight planning | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field approach and landing |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Weather information | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Systems and equipment malfunctions |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> National Airspace System | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Attitude instrument flying (IR) |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Performance and limitations | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Recovery from unusual attitudes (IR) |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Operation of systems | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Partial panel flying (IR) |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Supplemental oxygen | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Intercepting and tracking navigational systems (IR) |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Pressurization | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Pilotage and dead reckoning |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Preflight inspection | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Navigation systems and radar services |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Flight deck management | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Diversion |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine starting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Lost procedures |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Taxiing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Magnetic compass turns |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Runway incursion avoidance | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> After landing, parking, and securing |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Before-takeoff check | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Additional items at CFI's discretion _____ |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Radio communications and ATC light signals | _____ |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Traffic patterns | _____ |
| | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Airport, runway, and taxiway signs, markings, and lighting | _____ |
| 4. | Postflight critique and preview of next lesson | |

NOTE: This lesson may be completed under VFR or IFR at the discretion of the flight instructor and/or chief flight instructor, as appropriate.

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates the knowledge and skill to safely act as pilot in command during all phases of a cross-country flight. The pilot will be able to complete each task to the minimum standards listed in the current FAA Commercial Pilot Airman Certification Standards.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 56: MANEUVERS REVIEW

FSTD/ATD option

Objective

To review procedures and maneuvers covered previously.

Content

1. Flight Lesson 55 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items
 - Operation of systems
 - Aeromedical factors
 - Physiological aspects of night flying
 - Lighting and equipment for night flight
 - Normal and crosswind takeoff and climb
 - Normal and crosswind approach and landing
 - Soft-field takeoff and climb
 - Soft-field approach and landing
 - Short-field takeoff and maximum performance climb
 - Short-field approach and landing
 - Power-off 180° accuracy approach and landing
 - Go-around/rejected landing
 - Lazy eights
 - Maneuvering during slow flight
 - Power-off stalls
 - Power-on stalls
 - Accelerated stalls
 - Spin awareness
 - Emergency descent
 - Emergency approach and landing (simulated)
 - Additional items at CFI's discretion _____
4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates proficiency in the maneuvers performed. The pilot will complete each task to the standards specified in the current FAA Commercial Pilot Airman Certification Standards.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 58: COMPLEX AIRPLANE--MANEUVERS REVIEW

Objective

To review procedures and maneuvers covered previously.

Content

- 1. Flight Lesson 57 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
- 2. Preflight briefing
- 3. Review items
 - Operation of systems
 - Supplemental oxygen
 - Pressurization
 - Runway incursion avoidance
 - Soft-field takeoff and climb
 - Soft-field approach and landing
 - Short-field takeoff and maximum performance climb
 - Short-field approach and landing
 - Power-off 180° accuracy approach and landing
 - Traffic patterns
 - Go-around/rejected landing
 - Steep turns
 - Steep spirals
 - Chandelles
 - Lazy eights
 - Eights-on-pylons
 - Emergency descent
 - Emergency approach and landing (simulated)
 - Systems and equipment malfunctions
 - Emergency equipment and survival gear
 - Additional items at CFI's discretion _____
- 4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates proficiency at the commercial pilot skill level in all the assigned procedures and maneuvers. The pilot will complete each task to the standards specified in the current FAA Commercial Pilot Airman Certification Standards.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 59: STAGE THREE CHECK--COMPLEX AIRPLANE

Objective

During this stage check, an authorized instructor will determine if the pilot is proficient in the commercial pilot flight maneuvers.

Content

1. Flight Lesson 58 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____

2. Preflight briefing

3. Stage check tasks

- | | | | |
|--|--|--|--|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Performance and limitations | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Steep turns |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Operation of systems | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Steep spirals |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Preflight inspection | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Chandelles |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Flight deck management | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Lazy eights |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Engine starting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Eights-on-pylons |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Taxiing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Maneuvering during slow flight |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Runway incursion avoidance | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Power-off stalls |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Before-takeoff check | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Power-on stalls |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Radio communications and ATC light signals | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Accelerated stalls |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Traffic patterns | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Spin awareness |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Airport, runway, and taxiway signs, markings, and lighting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Straight-and-level (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Normal and crosswind takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Constant airspeed climbs and descents (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Normal and crosswind approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Turns to a heading (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Soft-field takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Recovery from unusual attitudes (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Soft-field approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Emergency descent |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Short-field takeoff and maximum performance climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Emergency approach and landing (simulated) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Short-field approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Systems and equipment malfunctions |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Power-off 180° accuracy approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Emergency equipment and survival gear |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Go-around/rejected landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | After landing, parking, and securing |
| | | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Additional items at CFI's discretion _____ |

4. Postflight critique

Completion Standards

This lesson and Stage Three will have been successfully completed when the pilot demonstrates the required level of proficiency in all stage check tasks based on the current FAA Commercial Pilot Airman Certification Standards. If additional instruction is necessary, the check instructor will assign the additional training. If the flight is satisfactory, the check instructor will complete the pilot's training records and recommend the pilot for the End-of-Course check.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 60: END-OF-COURSE CHECK--COMPLEX AIRPLANE

Objective

The pilot will be able to demonstrate the required proficiency of a commercial pilot by utilizing the current FAA Commercial Pilot Airman Certification Standards. Note: If a noncomplex and a complex airplane are used, a complex airplane must be used for all takeoffs, landings, and emergency procedures.

Content

1. Flight Lesson 59 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____

2. Preflight briefing

3. Stage check tasks

- | | |
|---|---|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Pilot qualifications | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Power-off 180° accuracy approach and landing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Airworthiness requirements | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Go-around/rejected landing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Weather information | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Steep turns |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Cross-country flight planning | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Steep spirals |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> National Airspace System | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Chandelles |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Performance and limitations | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Lazy eights |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Operation of systems | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Eights-on-pylons |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Aeromedical factors | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Pilotage and dead reckoning |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Physiological aspects of night flying | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Navigation systems and radar services |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Lighting and equipment for night flight | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Diversion |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Preflight inspection | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Lost procedures |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Flight deck management | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Magnetic compass turns |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine starting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Maneuvering during slow flight |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Taxiing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Power-off stalls |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Runway incursion avoidance | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Power-on stalls |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Before-takeoff check | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Accelerated stalls |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Radio communications and ATC light signals | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Spin awareness |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Traffic patterns | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Emergency descent |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Airport, runway, and taxiway signs, markings, and lighting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Emergency approach and landing (simulated) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Systems and equipment malfunctions |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Emergency equipment and survival gear |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Supplemental oxygen |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Pressurization |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field takeoff and maximum performance climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> After landing, parking, and securing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Additional items at CFI's discretion _____ |

4. Flight Lesson 60 complete? Yes ____ Copy of graduation certificate placed in pilot's folder? Yes ____

5. Postflight critique

Completion Standards

This lesson and the course of training will have been successfully completed when the pilot demonstrates the required level of proficiency in all tasks of the current FAA Commercial Pilot Airman Certification Standards. If additional instruction is necessary, the chief flight instructor will assign the additional training. If the flight is satisfactory, the chief flight instructor will complete the pilot's training records and issue a graduation certificate.

Instructor's comments: _____

Notes: _____

PART II:

COMMERCIAL PILOT TRAINING SYLLABUS AIRPLANE MULTI-ENGINE LAND ADD-ON RATING

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PART 141 STUDENT INFORMATION

Enrollment Prerequisites

You must hold at least a commercial pilot certificate, with an airplane category and single-engine land rating, and an instrument rating, with an airplane category, prior to enrolling in the flight portion of the commercial pilot multi-engine add-on rating certification course. If you do not hold an instrument rating at the time of enrollment, you may continue the course if you are concurrently enrolled in an approved instrument rating course.

Graduation Requirements

You must complete the training specified in this syllabus, with a minimum of 15 hours of ground training in the specified aeronautical knowledge areas and a minimum of 15 hours of flight training. These requirements are reflected in the Gleim ground and flight training syllabus.

Stage Checks

You must score a minimum of 80% on the comprehensive knowledge test at the conclusion of the ground training.

You must satisfactorily complete a comprehensive end-of-course flight check when all flight training is complete.

Credit for Previous Training

You may be given credit toward this commercial pilot multi-engine add-on rating course for previous pilot experience and knowledge [14 CFR 141.77(c)]:

1. If the credit is based on a Part 141 training course, the credit may be 50% of the requirements for this course.
2. If the credit is based on a Part 61 course, the credit cannot exceed 25% of the requirements for this course.

The receiving school will determine the amount of course credit to be given based on a proficiency test, a knowledge test, or both.

STRUCTURE OF THE GLEIM COMMERCIAL PILOT SYLLABUS (MULTI-ENGINE ADD-ON)

This syllabus consists of a ground training syllabus and a flight training syllabus. The ground and flight training may be done together as an integrated course of instruction, or each may be done separately. If done separately, the ground syllabus may be conducted as a home-study course or as a formal ground school.

This syllabus was constructed using the building-block progression of learning, in which the student is required to perform each task correctly before a more complex task is introduced. This method will promote the formation of correct habit patterns from the beginning.

Ground Training Syllabus

The ground training syllabus contains nine lessons. The ground training syllabus meets the training requirements of Appendix D to Part 141 and 14 CFR 61.125. The ground training can be conducted concurrently with the flight training, with the ground lessons completed in order as outlined in the lesson matrix. Ground training may also be conducted as part of a formal ground school or as a home-study program.

It is recommended that the lessons be completed in sequence, but the syllabus is flexible enough to meet the needs of an individual student or of a particular training environment. When departing from the sequence, the instructor is responsible for considering the blocks of learning affected and, if used by a Part 141 pilot school, whether it would affect FAA approval.

Each ground lesson involves studying the appropriate content from the Gleim **Multi-Engine Add-On Rating Course**, delivered online. At the end of each lesson, you will take a quiz or be quizzed by your instructor. You will review any incorrect responses with your instructor to ensure understanding.

An end-of-course knowledge test (found in Appendix B of this book) is administered after Ground Lesson 9 is completed. Upon successful completion of the end-of-course knowledge test, you will have successfully completed this ground training syllabus.

If this ground training is used as home study, we recommend that you complete the syllabus as quickly as possible so you will have more time to prepare for your flight lessons and be able to expedite your flight training.

NOTE: We recommend that you complete all of the ground lessons before beginning your multi-engine flight training. You may elect to follow the lesson sequence shown on page 102, but we recommend that you use these ground lessons as an opportunity to review the lesson content with your flight instructor. By studying the material on your own, you will develop a better sense of the content, be better informed during your ground training, and ask better questions during your sessions with your instructor.

Flight Training Syllabus

The flight training syllabus contains 10 lessons. This course of training is designed to expose you to multi-engine airplane operations in an ordered, logical sequence, which will aid your ability to transition to multi-engine flying faster. It is recommended that each lesson be completed in sequential order.

Stage check. Stage checks are designed to ensure that the student has acquired the necessary knowledge and skill. The End-of-Course check (Lesson 10) is designed to ensure that you are proficient in all multi-engine knowledge and skill areas and are ready for the commercial pilot multi-engine add-on practical test. It is also the final evaluation for a Part 141 graduation certificate. The chief flight instructor (Part 141) is responsible for ensuring that each pilot accomplishes the required end-of-course stage test.

The End-of-Course check should also be used as a review by instructors training under Part 61 to ensure that the student has the appropriate knowledge and skills.

Sequence of a flight lesson. Each flight lesson will begin with a preflight briefing. During this time, the instructor should first answer any questions you may have from the previous lesson. Next, your instructor will brief you on the lesson content, followed by an evaluation of your preparation for the lesson.

During the flight portion of the lesson, your instructor should begin with those maneuvers listed as “review items” before introducing new maneuvers. Items that include “(IR)” should be accomplished by reference to instruments only. The time required for each lesson will vary depending on the airport and the location of the training areas.

At the end of each lesson, your instructor will conduct a postflight critique and a preview of the next lesson. This time should be used to review what went well during the lesson and to identify and discuss any problem areas so that you can correct any deficiencies on subsequent flights.

The length of the preflight briefing and postflight critique will vary with each student and with his or her degree of preparedness for the lesson.

Pilot preparation. The key to minimizing frustration and cost is preparation. You should budget an average of 2 to 4 hours of home study prior to each flight lesson. Learning will be easier when you are fully prepared so that your instructor can maximize the time spent in flight training.

**MULTI-ENGINE ADD-ON RATING SYLLABUS
LESSON SEQUENCE AND TIMES**

The Ground Syllabus follows on pages 103 through 114, and the Flight Syllabus follows on pages 115 through 126.

The table below lists the sequence of the flight and ground lessons and the minimum time for each lesson. The times listed are for instructor/student guidance only and are not meant to be mandatory times. These times will ensure that the minimum time requirements for aeronautical knowledge and flight training are in compliance with Part 141, Appendix I, Additional Aircraft Category and/or Class Rating Course. Refer to our note on ground training on page 100 regarding accomplishing the ground portion of this training course.

The major difference between Part 141 and Part 61 training for the multi-engine add-on rating is that Part 61 requires no minimum amount of flight time or ground training to add the rating onto an existing commercial pilot certificate. This syllabus encourages a safety mindset and is more than adequate to meet the training needs of Part 61.

Each training flight must include a preflight briefing and a postflight critique of the pilot's performance by the instructor.

LESSON	Page	Flight									Ground
		Flight Training Dual	Flight Training Solo	Dual Cross-Country	Solo Cross-Country	Instrument	Night Dual	Night Solo	Complex Airplane Dual	Complex Airplane Solo	Aeronautical Knowledge Training
Ground 1 Multi Add-On	105										1.0
Ground 2 Aerodynamics	106										2.0
Flight 1 Intro to Multi-Engine Airplanes	117	1.0							1.0		
Ground 3 Systems	107										2.0
Ground 4 Safety Considerations	108										1.0
Flight 2 Normal Maneuvers	118	1.0							1.0		
Ground 5 Performance, Wt. & Bal.	109										1.5
Ground 6 Normal Operations	110										2.0
Flight 3 Performance Maneuvers	119	1.5							1.5		
Flight 4 Instrument Flying Skills	120	1.5				1.0			1.5		
Ground 7 Abnormal Operations	111										2.0
Flight 5 Abnormal Maneuvers	121	1.5				0.5			1.5		
Flight 6 Emergency Operations	122	1.5				0.5			1.5		
Flight 7 Day Cross-Country	123	2.0		2.0		1.0			2.0		
Flight 8 Night Cross-Country	124	2.0		2.0		1.0	2.0		2.0		
Ground 8 Your Practical Test	112										1.5
Ground 9 Oral Exam Guide	113										1.5
Flight 9 Maneuvers Review	125	1.5				0.5			1.5		
Ground End-of-Course Knowledge Test	114										0.5
Flight 10 End-Of-Course Check	126	1.5				0.5			1.5		
TOTALS		15.0		4.0		5.0	2.0		15.0		15.0

**PART II:
COMMERCIAL PILOT
GROUND TRAINING SYLLABUS
AIRPLANE MULTI-ENGINE LAND ADD-ON RATING**

<i>Ground Training Course Objectives</i>	104
<i>Ground Training Course Completion Standards</i>	104
<i>Ground Lesson 1: The Multi-Engine Add-On Rating</i>	105
<i>Ground Lesson 2: Multi-Engine Aerodynamics</i>	106
<i>Ground Lesson 3: Multi-Engine Airplane Systems</i>	107
<i>Ground Lesson 4: Multi-Engine Airplane Safety Considerations</i>	108
<i>Ground Lesson 5: Multi-Engine Airplane Performance and Weight and Balance</i>	109
<i>Ground Lesson 6: Multi-Engine Airplane Normal Operations</i>	110
<i>Ground Lesson 7: Multi-Engine Airplane Abnormal and Emergency Operations</i>	111
<i>Ground Lesson 8: Your FAA Practical Test</i>	112
<i>Ground Lesson 9: Oral Exam Guide</i>	113
<i>End-of-Course Knowledge Test</i>	114

GROUND TRAINING COURSE OBJECTIVES

The pilot will obtain the necessary aeronautical knowledge and meet the prerequisites specified in Appendix I to 14 CFR Part 141 (and the appropriate items from 14 CFR 61.125) to successfully pass the end-of-course knowledge test and subsequently the commercial pilot multi-engine add-on practical test.

GROUND TRAINING COURSE COMPLETION STANDARDS

The pilot will demonstrate through individual ground lesson quizzing, a cumulative end-of-course knowledge test, and school records that (s)he meets the prerequisites specified in Appendix I to 14 CFR Part 141 (and the appropriate items from 14 CFR 61.125) and has the aeronautical knowledge necessary to apply for the commercial pilot multi-engine add-on practical test.

<u>Lesson</u>	<u>Topic</u>	<u>Min. Time in Hours</u>
1	The Multi-Engine Add-On Rating	1.0
2	Multi-Engine Aerodynamics	2.0
3	Multi-Engine Airplane Systems	2.0
4	Multi-Engine Airplane Safety Considerations	1.0
5	Multi-Engine Airplane Performance and Weight and Balance	1.5
6	Multi-Engine Airplane Normal Operations	2.0
7	Multi-Engine Airplane Abnormal and Emergency Operations	2.0
8	Your FAA Practical Test	1.5
9	Oral Exam Guide	1.5
	End-of-Course Knowledge Test	15.0

GROUND LESSON 1: THE MULTI-ENGINE ADD-ON RATING

Objective

To further develop the pilot’s knowledge of the multi-engine rating, the requirements for obtaining the rating, and the regulations that impact operating with the rating.

Text References

Multi-Engine Add-On Rating Course, Study Unit 1, “The Multi-Engine Add-On Rating”

Multi-Engine Add-On Rating Course Study Unit 1 Contents
1.1 <i>Introduction</i>
1.2 <i>FAA Requirements for the Multi-Engine Rating</i>
1.3 <i>How to Get Started</i>
1.4 <i>Experience in Complex and High-Performance Airplanes</i>
1.5 <i>Private vs. Commercial Pilot Privileges</i>
1.6 <i>IFR vs. VFR-Only Privileges</i>
1.7 <i>Federal Regulations Relevant to Multi-Engine Operations</i>

Completion Standards

The lesson will have been successfully completed when the pilot answers the true/false study questions, reviews the knowledge transfer outline, and passes the multiple-choice test for Study Unit 1 in the Gleim Multi-Engine Add-On Rating Course with a minimum passing grade of 80%.

	Dates Studied	Date Completed
Multi-Engine Add-On Rating Course	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____

Notes:

GROUND LESSON 2: MULTI-ENGINE AERODYNAMICS

Objective

To further develop the pilot’s knowledge of multi-engine aerodynamics as well as the performance and controllability problems associated with single-engine operations.

Text References

Multi-Engine Add-On Rating Course, Study Unit 2, “Multi-Engine Aerodynamics”

Multi-Engine Add-On Rating Course Study Unit 2 Contents	
2.1	<i>Multi-Engine Advantages</i>
2.2	<i>Critical Engine</i>
2.3	<i>Single Engine Performance</i>
2.4	<i>Single Engine Controllability</i>
2.5	<i>Maintaining Control of a Multi-Engine Airplane Following an Engine Failure</i>
2.6	<i>Minimum Controllable Airspeed (V_{MC})</i>

Completion Standards

The lesson will have been successfully completed when the pilot answers the true/false study questions, reviews the knowledge transfer outline, and passes the multiple-choice test for Study Unit 2 in the Gleim Multi-Engine Add-On Rating Course with a minimum passing grade of 80%.

	Dates Studied	Date Completed
Multi-Engine Add-On Rating Course	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____

Notes:

GROUND LESSON 3: MULTI-ENGINE AIRPLANE SYSTEMS

Objective

To further develop the pilot’s knowledge of multi-engine airplane systems, especially systems that are unique in multi-engine applications.

Text References

Multi-Engine Add-On Rating Course, Study Unit 3, “Multi-Engine Airplane Systems”

Multi-Engine Add-On Rating Course Study Unit 3 Contents	
3.1	<i>General</i>
3.2	<i>Fuel Systems</i>
3.3	<i>Oil System</i>
3.4	<i>Trim and Primary Flight Control Systems</i>
3.5	<i>Flaps, Leading Edge Devices, and Spoilers</i>
3.6	<i>Powerplant</i>
3.7	<i>Propellers</i>
3.8	<i>Electrical Systems</i>
3.9	<i>Landing Gear</i>
3.10	<i>Environmental System</i>
3.11	<i>De-icing and Anti-icing</i>
3.12	<i>Pitot-Static System, Vacuum/Pressure System, and Associated Instruments</i>

Completion Standards

The lesson will have been successfully completed when the pilot answers the true/false study questions, reviews the knowledge transfer outline, and passes the multiple-choice test for Study Unit 3 in the Gleim Multi-Engine Add-On Rating Course with a minimum passing grade of 80%.

	Dates Studied	Date Completed
Multi-Engine Add-On Rating Course	_____	_____

Notes:

GROUND LESSON 4: MULTI-ENGINE AIRPLANE SAFETY CONSIDERATIONS

Objective

To further develop the pilot’s knowledge of basic aviation safety concepts, particularly those that have special impact on multi-engine operations.

Text References

Multi-Engine Add-On Rating Course, Study Unit 4, “Multi-Engine Airplane Safety Considerations”

Multi-Engine Add-On Rating Course Study Unit 4 Contents	
4.1	<i>General</i>
4.2	<i>Air Traffic Control Emergency Services</i>
4.3	<i>Emergency ATC Communications</i>
4.4	<i>Radio Failure Procedures</i>
4.5	<i>Post-September 11, 2001, Considerations</i>
4.6	<i>Risk Management and Aeronautical Decision Making</i>
4.7	<i>Land and Hold Short Operations (LAHSO)</i>
4.8	<i>Avoiding Wake Turbulence</i>
4.9	<i>Avoiding Runway Incursions</i>
4.10	<i>Collision Avoidance</i>
4.11	<i>Airport Signs, Markings, and Lighting</i>
4.12	<i>Aviation Safety Reporting System (ASRS)</i>

Completion Standards

The lesson will have been successfully completed when the pilot answers the true/false study questions, reviews the knowledge transfer outline, and passes the multiple-choice test for Study Unit 4 in the Gleim Multi-Engine Add-On Rating Course with a minimum passing grade of 80%.

	Dates Studied	Date Completed
Multi-Engine Add-On Rating Course	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____

Notes:

GROUND LESSON 5: MULTI-ENGINE AIRPLANE PERFORMANCE AND WEIGHT AND BALANCE

Objective

To further develop the pilot’s knowledge of multi-engine performance and weight-and-balance definitions, principles, and calculations.

Text References

Multi-Engine Add-On Rating Course, Study Unit 5, “Multi-Engine Airplane Performance and Weight and Balance”

Multi-Engine Add-On Rating Course Study Unit 5 Contents
<hr/> 5.1 <i>General</i> 5.2 <i>Performance Considerations</i> 5.3 <i>Weight and Balance Considerations</i>

Completion Standards

The lesson will have been successfully completed when the pilot answers the true/false study questions, reviews the knowledge transfer outline, and passes the multiple-choice test for Study Unit 5 in the Gleim Multi-Engine Add-On Rating Course with a minimum passing grade of 80%.

	<hr style="border: 1px solid black;"/> Dates Studied	Date Completed
Multi-Engine Add-On Rating Course	_____	_____

Notes:

GROUND LESSON 6: MULTI-ENGINE AIRPLANE NORMAL OPERATIONS

Objective

To further develop the pilot’s knowledge of the multi-engine Airman Certification Standards tasks associated with normal operations.

Text References

Multi-Engine Add-On Rating Course, Study Unit 6, “Multi-Engine Airplane Normal Operations”

Multi-Engine Add-On Rating Course Study Unit 6 Contents	
6.1	<i>General</i>
6.2	<i>Preflight Inspection (Task II.A.)</i>
6.3	<i>Cockpit Management (Task II.B.)</i>
6.4	<i>Engine Starting (Task II.C.)</i>
6.5	<i>Taxiing (Task II.D.)</i>
6.6	<i>Runway Incursion Avoidance (Task II.F.)</i>
6.7	<i>Before Takeoff Check (Task II.G.)</i>
6.8	<i>Normal and Crosswind Takeoff and Climb (Task IV.A.)</i>
6.9	<i>Normal and Crosswind Approach and Landing (Task IV.B.)</i>
6.10	<i>Short-Field Takeoff and Maximum Performance Climb (Task IV.C.)</i>
6.11	<i>Short-Field Approach and Landing (Task IV.D.)</i>
6.12	<i>Steep Turns (Task V.A.)</i>
6.13	<i>Maneuvering During Slow Flight (Task VII.A.)</i>
6.14	<i>Power-Off Stalls (Task VII.B.)</i>
6.15	<i>Power-On Stalls (Task VII.C.)</i>
6.16	<i>Accelerated Stalls (Task VII.D.)</i>

Completion Standards

The lesson will have been successfully completed when the pilot answers the true/false study questions, reviews the knowledge transfer outline, and passes the multiple-choice test for Study Unit 6 in the Gleim Multi-Engine Add-On Rating Course with a minimum passing grade of 80%.

	Dates Studied	Date Completed
Multi-Engine Add-On Rating Course	_____	_____

Notes:

GROUND LESSON 7: MULTI-ENGINE AIRPLANE ABNORMAL AND EMERGENCY OPERATIONS

Objective

To further develop the pilot’s knowledge of the multi-engine Airman Certification Standards tasks associated with abnormal operations.

Text References

Multi-Engine Add-On Rating Course, Study Unit 7, “Multi-Engine Airplane Abnormal and Emergency Operations”

Multi-Engine Add-On Rating Course Study Unit 7 Contents	
7.1	<i>General</i>
7.2	<i>Emergency Descent (Task VIII.A.)</i>
7.3	<i>Engine Failure During Takeoff Before V_{MC} (Task VIII.B.)</i>
7.4	<i>Engine Failure After Lift-Off (Task VIII.C.)</i>
7.5	<i>Approach and Landing with an Inoperative Engine (Task VIII.D.)</i>
7.6	<i>Systems and Equipment Malfunctions (Task VIII.E.)</i>
7.7	<i>Maneuvering with One Engine Inoperative (Task X.A.)</i>
7.8	<i>V_{MC} Demonstration (Task X.B.)</i>
7.9	<i>Engine Failure During Flight (By Reference to Instruments) (Task X.C.)</i>
7.10	<i>Instrument Approach – One Engine Inoperative (By Reference to Instruments) (Task X.D.)</i>

Completion Standards

The lesson will have been successfully completed when the pilot answers the true/false study questions, reviews the knowledge transfer outline, and passes the multiple-choice test for Study Unit 7 in the Gleim Multi-Engine Add-On Rating Course with a minimum passing grade of 80%.

	Dates Studied	Date Completed
Multi-Engine Add-On Rating Course	_____	_____

Notes:

GROUND LESSON 8: YOUR FAA PRACTICAL TEST

Objective

To further develop the pilot’s knowledge of the process for completing the FAA multi-engine add-on practical test, as well as to review the knowledge tasks in the Airman Certification Standards likely to be covered during the oral portion of the practical test.

Text References

Multi-Engine Add-On Rating Course, Study Unit 8, “Your FAA Practical Test,” Subunits 1-8, 10

Multi-Engine Add-On Rating Course Study Unit 8 Contents	
8.1	<i>General</i>
8.2	<i>FAA Practical Test Standards</i>
8.3	<i>What to Take to Your Practical Test</i>
8.4	<i>Performance and Limitations (Task I.F.)</i>
8.5	<i>Operation of Systems (Task I.G.)</i>
8.6	<i>Principles of Flight – Engine Inoperative (Task I.H.)</i>
8.7	<i>Spin Awareness (Task VII.E.)</i>
8.8	<i>Emergency Equipment and Survival Gear (Task VII.F.)</i>
8.10	<i>The Flight Portion of Your Practical Test</i>

Completion Standards

The lesson will have been successfully completed when when the pilot answers the true/false study questions, reviews the knowledge transfer outline, and passes the multiple-choice test for Study Unit 8 in the Gleim Multi-Engine Add-On Rating Course with a minimum passing grade of 80%.

	Dates Studied	Date Completed
Multi-Engine Add-On Rating Course	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____

Notes:

GROUND LESSON 9: ORAL EXAM GUIDE

Objective

To further develop the pilot’s knowledge of the topics usually covered during the oral portion of the multi-engine airplane practical test and to prepare the pilot for the oral exam.

Text References

Multi-Engine Add-On Rating Course, Study Unit 8, “Your FAA Practical Test,” Subunit 9, Oral Exam Guide (40 pages)

Multi-Engine Add-On Rating Course Study Unit 8 Contents
<hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> 8.9 Oral Exam Guide

Completion Standards

The lesson will have been successfully completed when the pilot reviews the Oral Exam Guide, provided as a link in Study Unit 8, Subunit 9, of the Gleim Multi-Engine Add-On Rating Course, and displays to his or her instructor a satisfactory level of understanding through oral quizzing according to the current Airman Certification Standards.

	Dates Studied					Date Completed
Multi-Engine Add-On Rating Course	_____	_____	_____	_____	_____	_____

Notes:

END-OF-COURSE KNOWLEDGE TEST

Objective

To evaluate the pilot's knowledge on the aeronautical knowledge subject areas required by Appendix I to 14 CFR Part 141 and to determine if the pilot is prepared for the oral exam portion of the commercial pilot multi-engine add-on practical test.

Content

Questions similar to those that may be provided during the commercial pilot multi-engine add-on practical test.

Completion Standards

The lesson and the ground training syllabus will have been successfully completed when the pilot has completed this knowledge test with a minimum passing grade of 80%.

PART II: COMMERCIAL PILOT FLIGHT TRAINING SYLLABUS AIRPLANE MULTI-ENGINE LAND ADD-ON RATING

<i>Flight Training Course Objectives</i>	115
<i>Flight Training Course Completion Standards</i>	115
<i>Flight Lesson 1: Introduction to Multi-Engine Airplanes</i>	117
<i>Flight Lesson 2: Normal Multi-Engine Flight Maneuvers</i>	118
<i>Flight Lesson 3: Multi-Engine Performance Maneuvers</i>	119
<i>Flight Lesson 4: Instrument Flying Skills</i>	120
<i>Flight Lesson 5: Abnormal Multi-Engine Flight Maneuvers</i>	121
<i>Flight Lesson 6: Emergency Operations</i>	122
<i>Flight Lesson 7: Multi-Engine Day Cross-Country</i>	123
<i>Flight Lesson 8: Multi-Engine Night Cross-Country</i>	124
<i>Flight Lesson 9: Maneuvers Review</i>	125
<i>Flight Lesson 10: End-of-Course Check</i>	126

FLIGHT TRAINING COURSE OBJECTIVES

The pilot will obtain the aeronautical knowledge and experience and demonstrate the flight proficiency necessary to meet the requirements for a commercial pilot certificate with a multi-engine land class add-on rating.

FLIGHT TRAINING COURSE COMPLETION STANDARDS

The pilot will demonstrate through the End-of-Course Check and school records that (s)he has the necessary flight proficiency and aeronautical experience to obtain a commercial pilot certificate with a multi-engine land class add-on rating.

<u>Lesson</u>	<u>Topic</u>
1	Introduction to Multi-Engine Airplanes
2	Normal Multi-Engine Flight Maneuvers
3	Multi-Engine Performance Maneuvers
4	Instrument Flying Skills
5	Abnormal Multi-Engine Flight Maneuvers
6	Emergency Operations
7	Multi-Engine Day Cross-Country
8	Multi-Engine Night Cross-Country
9	Maneuvers Review
10	End-of-Course Check

The following is a brief description of the parts of each flight lesson in this syllabus:

Objective: We open each lesson with an objective, usually a sentence or two, to help you gain perspective and understand the goal for that particular lesson.

Text References: For lessons with new learning items, this section tells you which reference books you will need to study or refer to while mastering the tasks within the lesson. Abbreviations are given to facilitate the cross-referencing process.

Content: Each lesson contains a list of the tasks required to be completed before moving to the next lesson. A task may be listed as a “review item” (a task that was covered in a previous lesson) or as a “new item” (a task that is introduced to you for the first time). Items that include “**IR**” should be accomplished by reference to instruments only. Each task is preceded by three blank “checkoff” boxes, which may be used by your CFI to keep track of your progress and to indicate that each task was completed.

There are three boxes because it may take more than one flight to complete the lesson. Your CFI may mark the box(es) next to each task in one of the following methods (or any other method desired):

✓ - task completed to lesson completion standards	D - demonstrated by instructor A - accomplished by you S - safe/satisfactory C - meets or exceeds ACS standards	1 - above lesson standard 2 - meets lesson standard 3 - below lesson standard
---	--	---

The last task in each flight lesson is labeled “Additional items at CFI’s discretion,” and is followed by several blank lines. This area can be used to record any extra items that your CFI feels are appropriate to the lesson, taking into account such variables as weather, local operational considerations, and your progress as a student.

NOTE: CFIs are reminded not to limit themselves to the blank lines provided—use as much of the page as you need.

Completion Standards: Based on these standards, your CFI determines how well you have met the objective of the lesson in terms of knowledge and skill.

Instructor’s Comments and Lesson Assignment: Space is provided for your CFI’s critique of the lesson, which you can refer to later. Your instructor may also write any specific assignment for the next lesson.

Reading Assignments for Flight Lessons

You are expected to be prepared for each flight lesson. Our reading assignments include text references for new tasks to help you understand what is going to happen and how and why you need to do everything **before** you go to the airport.

Next to each new item in the **Content** section, we provide study unit- and/or subunit-level references to read in *Commercial Pilot Flight Maneuvers and Practical Test Prep* (FM), Multi-Engine Add-on Rating Course (MARC), and/or *Pilot Handbook* (PH) and the section to read, if appropriate, in your airplane’s Pilot’s Operating Handbook (POH). You can make use of the comprehensive index in the Gleim books if you need to analyze specific task element-level details.

Study Tips

- As you read the material, attempt to understand the basic concepts.
- Try to anticipate and visualize the concepts and flight maneuvers.
- With this basic knowledge, your CFI can expand on the specific and finer points, especially when explaining how a task is done in your specific airplane.
- After your flight lesson, task items are fresh in your mind; they will make sense, and you should be able to understand and learn more.
- Study review items so you can explain them to your CFI and your examiner.
- After you study, relax and plan a time to begin preparing for the next flight lesson.

FLIGHT LESSON 1: INTRODUCTION TO MULTI-ENGINE AIRPLANES**Objective**

To introduce the pilot to the multi-engine training airplane, specifically how its operation differs from single-engine airplanes.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
 Multi-Engine Add-On Rating Course (MARC)
 Pilot's Operating Handbook (POH)

Content

1. Preflight briefing
2. New items
 - Pilot qualifications - FM 3
 - Airworthiness requirements - FM 4
 - Operation of systems - FM 9; MARC 3, 8.5; POH 1, 7, 8, 9
 - Performance and limitations - FM 8; MARC 5, 8.4; POH 2, 5, 6
 - Preflight inspection - FM 11; MARC 6.2; POH 4
 - Flight deck management - FM 12; MARC 6.3
 - Engine starting - FM 13; MARC 6.4; POH 4
 - Taxiing - FM 14; MARC 6.5
 - Before-takeoff check - FM 15; MARC 6.7; POH 4
 - Normal and crosswind takeoff and climb - FM 18; MARC 6.8; POH 4
 - Traffic patterns - FM 17
 - Runway incursion and collision avoidance - FM 14; MARC 4.9, 4.10
 - Normal and crosswind approach and landing - FM 19; MARC 6.9; POH 4
 - After landing, parking, and securing - FM 46; POH 4
 - Additional items at CFI's discretion _____
3. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates his or her ability to perform the tasks listed in a multi-engine airplane with minimal assistance from the instructor. The pilot will be able to maintain the desired altitude, ± 150 ft.; airspeed, ± 15 kt.; and heading, $\pm 20^\circ$.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 2: NORMAL MULTI-ENGINE FLIGHT MANEUVERS

Objective

To review fundamental multi-engine maneuvers and build the pilot’s knowledge and proficiency while reducing his or her reliance on instructor guidance.

Text References

- Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)*
- Multi-Engine Add-On Rating Course (MARC)
- Pilot’s Operating Handbook (POH)

Content

1. Flight Lesson 1 complete? Yes ____ Copy of lesson placed in pilot’s folder? Yes ____
2. Preflight briefing
3. Review items
 - Preflight preparation
 - Preflight inspection
 - Flight deck management
 - Engine starting
 - Taxiing
 - Before-takeoff check
 - Normal and crosswind takeoff and climb
 - Traffic patterns
 - Runway incursion and collision avoidance
 - Normal and crosswind approach and landing
 - After landing, parking, and securing

4. New items
 - Maneuvering during slow flight - FM 35; MARC 6.13
 - Power-off stalls (straight ahead and in turning flight) - FM 36; MARC 6.14
 - Power-on stalls (straight ahead and in turning flight) - FM 37; MARC 6.15
 - Accelerated stalls - FM 38; MARC 6.16
 - Spin awareness - FM 39; MARC 8.7; POH 2
 - Additional items at CFI’s discretion _____

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates his or her ability to perform the tasks listed in a multi-engine airplane with minimal assistance from the instructor. The pilot will be able to maintain the desired altitude, ±150 ft.; airspeed, ±15 kt.; and heading, ±20°.

Instructor’s comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 3: MULTI-ENGINE PERFORMANCE MANEUVERS**Objective**

To enhance the pilot's knowledge of multi-engine operations by exposing him or her to more advanced maneuvers.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Multi-Engine Add-On Rating Course (MARC)
Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 2 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items
 - Preflight preparation
 - Preflight procedures
 - Normal and crosswind takeoff and climb
 - Traffic patterns
 - Runway incursion and collision avoidance
 - Maneuvering during slow flight
 - Power-off stalls (straight ahead and in turning flight)
 - Power-on stalls (straight ahead and in turning flight)
 - Accelerated stalls
 - Spin awareness
 - Normal and crosswind approach and landing
 - After landing, parking, and securing

4. New items
 - Steep turns - FM 26; MARC 6.12
 - Short-field takeoff and maximum performance climb - FM 22; MARC 6.10
 - Short-field approach and landing - FM 23; MARC 6.11
 - Go-around/rejected landing - FM 25; POH 4
 - High altitude operations - FM 40, 41; POH 7, 8
 - Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates his or her ability to perform the tasks listed in a multi-engine airplane with minimal assistance from the instructor. The pilot will be able to maintain the desired altitude, ± 150 ft.; airspeed, ± 15 kt.; and heading, $\pm 20^\circ$.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 4: INSTRUMENT FLYING SKILLS

Objective

To review and enhance the pilot’s ability to perform instrument pilot tasks, specifically in a multi-engine airplane.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Multi-Engine Add-On Rating Course (MARC)

Content

1. Flight Lesson 3 complete? Yes ____ Copy of lesson placed in pilot’s folder? Yes ____
2. Preflight briefing
3. Review items
 - Preflight preparation
 - Preflight procedures
 - Short-field takeoff and maximum performance climb
 - Steep turns
 - Go-around/rejected landing
 - High altitude operations
 - Short-field approach and landing

4. New items (all items by instrument reference only)

- Attitude instrument flying - MARC 9
- Steep turns - CFI
- Recovery from unusual attitudes - MARC 9.6
- VOR/Localizer/GPS orientation and tracking - FM 32
- VOR/Localizer/GPS holding* - MARC 9.7
- VOR/Localizer/ILS/GPS approach(es)* - MARC 9.8
- Additional items at CFI’s discretion _____

*These tasks need only be completed if the pilot currently holds an instrument rating or seeks to add one during the multi-engine practical test. These tasks should be completed using whatever equipment is installed and available in the training airplane.

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates his or her ability to perform the tasks listed in a multi-engine airplane with minimal assistance from the instructor. The pilot will be able to demonstrate the appropriate level of proficiency per the Commercial Pilot Airman Certification Standards. Instrument reference tasks should be performed at the proficiency level specified in the Instrument Rating Airman Certification Standards.

Instructor’s comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 5: ABNORMAL MULTI-ENGINE FLIGHT MANEUVERS**Objective**

To expose the pilot to various failures, especially engine failures, and the operational considerations surrounding those failures when operating a multi-engine airplane.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Multi-Engine Add-On Rating Course (MARC)
Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 4 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items

- Attitude instrument flying (IR)
- Recovery from unusual attitudes (IR)
- VOR/Localizer/GPS orientation and tracking (IR)
- VOR/Localizer/GPS holding (IR)*
- VOR/Localizer/ILS/GPS approach(es) (IR)*

*These tasks need only be completed if the pilot currently holds an instrument rating or seeks to add one during the multi-engine practical test. These tasks should be completed using whatever equipment is installed and available in the training airplane.

4. New items

- Systems and equipment malfunctions - FM 44; MARC 7.6; POH 3, 9
- Maneuvering with one engine inoperative - MARC 7.7, 8.6
- V_{MC} demonstration - MARC 7.8
- Partial panel instrument flying skills (IR) - CFI
 - Loss of primary flight instrument indicators (IR) - CFI
 - Constant airspeed climbs and descents (IR) - CFI
 - Magnetic compass turns (IR) - CFI
 - Timed turns (IR) - CFI
 - Recovery from unusual attitudes (IR) - CFI
- Additional items at CFI's discretion _____

IR means instrument references only

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates his or her ability to perform the tasks listed in a multi-engine airplane with minimal assistance from the instructor. The pilot will be able to demonstrate the appropriate level of proficiency per the Commercial Pilot Airman Certification Standards. Instrument reference tasks should be performed at the proficiency level specified in the Instrument Rating Airman Certification Standards.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 7: MULTI-ENGINE DAY CROSS-COUNTRY**Objective**

To expose the pilot to real-world multi-engine operations by conducting a daytime cross-country flight.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)

Content

1. Flight Lesson 6 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____

2. Preflight briefing

3. Review items

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Performance and weight and balance limitations |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Systems and equipment malfunctions |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Maneuvering with one engine inoperative |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | V _{MC} demonstration |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Engine failure during takeoff before V _{MC} |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Engine failure during takeoff after lift-off |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Emergency descent |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Full panel instrument flying skills (IR) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Partial panel instrument flying skills (IR) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Engine failure during flight by reference to instruments (IR)* |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | VOR/Localizer/GPS holding (IR)* |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Instrument approaches – all engines operating (IR)* |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Instrument approaches – one engine inoperative (IR)* |

*These tasks need only be completed if the pilot currently holds an instrument rating or seeks to add one during the multi-engine practical test. These tasks should be completed using whatever equipment is installed and available in the training airplane.

4. New items

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Cross-country flight planning - FM 6 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Weather briefing - FM 5 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Pilotage and dead reckoning - FM 31 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Lost procedures - FM 34 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Diversion to an alternate airport - FM 33 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Airspace/ATC operations/procedures - FM 7 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Airport, runway, and taxiway signs, markings, and lighting - FM 14 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Aeromedical factors - FM 10 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Additional items at CFI's discretion _____ |

5. Postflight critique and preview of next lesson

NOTE: This lesson may be completed under VFR or IFR at the discretion of the flight instructor and/or chief flight instructor, as appropriate.

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates his or her ability to perform the tasks listed in a multi-engine airplane with minimal assistance from the instructor. The flight must be no less than 2 hours in duration and cover a distance greater than 100 nautical miles from the point of departure. The pilot will be able to demonstrate the appropriate level of proficiency per the Commercial Pilot Airman Certification Standards.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 8: MULTI-ENGINE NIGHT CROSS-COUNTRY

Objective

To expose the pilot to real-world multi-engine operations by conducting a nighttime cross-country flight.

Content

- 1. Flight Lesson 7 complete? Yes ____ Copy of lesson placed in pilot’s folder? Yes ____
- 2. Preflight briefing
- 3. Review items

- Systems and equipment malfunctions
- Maneuvering with one engine inoperative
- V_{MC} demonstration
- Engine failure during takeoff before V_{MC}
- Engine failure during takeoff after lift-off
- Emergency descent
- Full panel instrument flying skills (IR)
- Partial panel instrument flying skills (IR)
- Engine failure during flight by reference to instruments (IR)*
- VOR/Localizer/GPS holding (IR)*
- Instrument approaches – all engines operating (IR)*
- Instrument approaches – one engine inoperative (IR)*
- Cross-country flight planning
- Performance and weight and balance limitations
- Weather briefing
- Pilotage and dead reckoning
- Lost procedures
- Diversion to an alternate airport
- Airspace/ATC operations/procedures
- Airport, runway, and taxiway signs, markings, and lighting

*These tasks need only be completed if the pilot currently holds an instrument rating or seeks to add one during the multi-engine practical test. These tasks should be completed using whatever equipment is installed and available in the training airplane.

- 4. New items
 - Aeromedical factors associated with night flight – CFI
 - Required pilot/airplane equipment for night flight – CFI
 - Additional items at CFI’s discretion _____
- 5. Postflight critique and preview of next lesson

NOTE: This lesson may be completed under VFR or IFR at the discretion of the flight instructor and/or chief flight instructor, as appropriate.

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates his or her ability to perform the tasks listed in a multi-engine airplane with minimal assistance from the instructor. The flight must be no less than 2 hours in duration and cover a distance greater than 100 nautical miles from the point of departure. The pilot will be able to demonstrate the appropriate level of proficiency per the Commercial Pilot Airman Certification Standards.

Instructor’s comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 9: MANEUVERS REVIEW

Objective

To prepare the pilot for the end-of-course check and the Commercial Pilot Multi-Engine Land Add-On Practical Test.

Content

1. Flight Lesson 8 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items

- | | |
|--|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Preflight preparation <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Preflight inspection <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Flight deck management <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine starting <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Taxiing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Before-takeoff check <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind takeoff and climb <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Traffic patterns <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Runway incursion and collision avoidance <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind approach and landing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> After landing, parking, and securing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Maneuvering during slow flight <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Power-off stalls
(straight ahead and in turning flight) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Power-on stalls
(straight ahead and in turning flight) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Accelerated stalls <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Spin awareness <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Steep turns <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field takeoff and maximum performance climb <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field approach and landing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Go-around/rejected landing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> High altitude operations <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Attitude instrument flying <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Steep turns (IR) | <ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Recovery from unusual attitudes (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> VOR/Localizer/GPS orientation and tracking (IR)* <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> VOR/Localizer/GPS holding (IR)* <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> VOR/Localizer/ILS/GPS approach(es) (IR)* <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Partial panel instrument flying skills (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Loss of primary flight instrument indicators (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Constant airspeed climbs and descents (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Magnetic compass turns (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Timed turns (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Recovery from unusual attitudes (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Systems and equipment malfunctions <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Maneuvering with one engine inoperative <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> V_{MC} demonstration <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine failure during takeoff before V_{MC} <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine failure during takeoff after lift-off <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Emergency descent <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine failure during flight by reference to instruments (IR)* <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Instrument approaches - one engine inoperative (IR)* <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Additional items at CFI's discretion _____ |
|--|--|

*These tasks need only be completed if the pilot currently holds an instrument rating or seeks to add one during the multi-engine practical test. These tasks should be completed using whatever equipment is installed and available in the training airplane.

4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates his or her ability to perform the tasks listed in a multi-engine airplane with minimal assistance from the instructor. The pilot will be able to demonstrate the appropriate level of proficiency per the Commercial Pilot Airman Certification Standards.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 10: END-OF-COURSE CHECK

Objective

To ensure that the pilot meets all applicable standards for the Commercial Pilot Multi-Engine Land Add-On Practical Test.

Content

- 1. Flight Lesson 9 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
- 2. Preflight briefing
- 3. Review items

- | | |
|--|---|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Preflight preparation | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Recovery from unusual attitudes (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Preflight inspection | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> VOR/Localizer/GPS orientation and tracking (IR)* |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Flight deck management | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> VOR/Localizer/GPS holding (IR)* |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine starting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> VOR/Localizer/ILS/GPS approach(es) (IR)* |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Taxiing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Partial panel instrument flying skills (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Before-takeoff check | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Loss of primary flight instrument indicators (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Constant airspeed climbs and descents (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Traffic patterns | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Magnetic compass turns (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Runway incursion and collision avoidance | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Timed turns (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Recovery from unusual attitudes (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> After landing, parking, and securing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Systems and equipment malfunctions |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Maneuvering during slow flight | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Maneuvering with one engine inoperative |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Power-off stalls | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> V _{MC} demonstration |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> (straight ahead and in turning flight) | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine failure during takeoff before V _{MC} |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Power-on stalls | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine failure during takeoff after lift-off |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> (straight ahead and in turning flight) | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Emergency descent |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Accelerated stalls | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine failure during flight by reference to instruments (IR)* |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Spin awareness | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Instrument approaches - one engine inoperative (IR)* |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Steep turns | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Additional items at CFI's discretion _____ |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field takeoff and maximum performance climb | _____ |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field approach and landing | _____ |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Go-around/rejected landing | _____ |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> High altitude operations | _____ |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Attitude instrument flying | _____ |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Steep turns (IR) | _____ |

*These tasks need only be completed if the pilot currently holds an instrument rating or seeks to add one during the multi-engine practical test. These tasks should be completed using whatever equipment is installed and available in the training airplane.

- 4. Flight Lesson 10 complete? Yes ____ Copy of lesson and graduation certificate placed in pilot's folder? Yes ____
- 5. Postflight critique

Completion Standards

The lesson and the course of training will have been successfully completed when the pilot demonstrates his or her ability to perform the tasks listed in a multi-engine airplane and demonstrate the appropriate level of proficiency per the Commercial Pilot Airman Certification Standards. If additional instruction is necessary, the chief flight instructor will assign the additional training. If the flight is satisfactory, the chief flight instructor will complete the pilot's training records and issue a graduation certificate.

Instructor's comments: _____

Notes: _____

APPENDIX A

KNOWLEDGE TESTS AND FIGURES FOR AIRPLANE SINGLE-ENGINE LAND

<i>Stage One Knowledge Test - Single-Engine</i>	128
<i>Stage Two Knowledge Test - Single-Engine</i>	130
<i>End-of-Course Knowledge Test - Single-Engine</i>	132
<i>Figures for Knowledge Tests - Single-Engine</i>	141

For a copy of the answer key to all *Commercial Pilot Syllabus* Stage Tests, please email a request for the CPSYL Stage Test Answer Key to the Gleim Aviation Department at aviationteam@gleim.com.

STAGE ONE KNOWLEDGE TEST - SINGLE-ENGINE

1. (Refer to Figure 15 on page 144.)

GIVEN:

Airport pressure altitude	2,000 ft
Airport temperature	20°C
Cruise pressure altitude	10,000 ft
Cruise temperature	0°C

What will be the fuel, time, and distance required to climb to cruise altitude under the given conditions?

- A — 5 gallons, 9 minutes, 13 NM.
- B — 6 gallons, 11 minutes, 16 NM.
- C — 7 gallons, 12 minutes, 18 NM.

2. GIVEN:

Pressure altitude	6,000 ft
True air temperature	+30°F

From the conditions given, the approximate density altitude is

- A — 9,000 feet.
- B — 5,500 feet.
- C — 5,000 feet.

3. (Refer to Figure 3 on page 141.) If an airplane glides at an angle of attack of 10°, how much altitude will it lose in 1 mile?

- A — 240 feet.
- B — 480 feet.
- C — 960 feet.

4. (Refer to Figure 32 on page 146.)

GIVEN:

Temperature	30°F
Pressure altitude	6,000 ft
Weight	3,300 lb
Headwind	20 kts

What is the total takeoff distance over a 50-foot obstacle?

- A — 1,100 feet.
- B — 1,300 feet.
- C — 1,500 feet.

5. (Refer to Figure 33 on page 147.)

GIVEN:

Weight	3,700 lb
Pressure altitude	22,000 ft
Temperature	-10°C

What is the maximum rate of climb under the given conditions?

- A — 305 ft/min.
- B — 320 ft/min.
- C — 384 ft/min.

6. The uncontrolled firing of the fuel/air charge in advance of normal spark ignition is known as

- A — instantaneous combustion.
- B — detonation.
- C — preignition.

7. GIVEN:

Total weight	4,137 lb
CG location	Station 67.8
Fuel consumption	13.7 GPH
Fuel CG	Station 68.0

After 1 hour 30 minutes of flight time, the CG would be located at station

- A — 67.79
- B — 68.79
- C — 70.78

8. (Refer to Figure 64 on page 150.) You are holding short for an intersection departure on Runway 8 with the sign in front of you. Which way should you turn when taxiing onto the runway to depart Runway 8?

- A — Turn right.
- B — Turn left.
- C — Insufficient information is given.

9. When operating an airplane for the purpose of takeoff or landing within Class D airspace under special VFR, what minimum distance from clouds and what visibility are required?

- A — Remain clear of clouds, and the ground visibility must be at least 1 SM.
- B — 500 feet beneath clouds, and the ground visibility must be at least 1 SM.
- C — Remain clear of clouds, and the flight visibility must be at least 1 NM.

10. During the transition from straight-and-level flight to a climb, the angle of attack is increased and lift

- A — is momentarily decreased.
- B — remains the same.
- C — is momentarily increased.

11. Applying carburetor heat will

- A — not affect the mixture.
- B — lean the fuel/air mixture.
- C — enrich the fuel/air mixture.

12. On a wing, the force of lift acts perpendicular to and the force of drag acts parallel to the

- A — chord line.
- B — flightpath.
- C — longitudinal axis.

13. Longitudinal stability involves the motion of the airplane controlled by its

- A — rudder.
- B — elevator.
- C — ailerons.

14. The ratio between the total airload imposed on the wing and the gross weight of an aircraft in flight is known as

- A — load factor and directly affects stall speed.
- B — aspect load and directly affects stall speed.
- C — load factor and has no relation with stall speed.

15. What will occur if no leaning is made with the mixture control as the flight altitude increases?

- A — The volume of air entering the carburetor decreases and the amount of fuel decreases.
- B — The density of air entering the carburetor decreases and the amount of fuel increases.
- C — The density of air entering the carburetor decreases and the amount of fuel remains constant.

16. Notification to the NTSB is required when there has been substantial damage

- A — which requires repairs to landing gear.
- B — to an engine caused by engine failure in flight.
- C — which adversely affects structural strength or flight characteristics.

17. The operator of an aircraft that has been involved in an incident is required to submit a report to the nearest field office of the NTSB

- A — within 7 days.
- B — within 10 days.
- C — only if requested to do so.

18. The carriage of passengers for hire by a commercial pilot is

- A — not authorized in limited category aircraft.
- B — not authorized in utility category airplane.
- C — authorized in restricted category aircraft.

19. When operating a U.S.-registered civil aircraft, which document is required by regulation to be available in the aircraft?

- A — A manufacturer's Operations Manual.
- B — A current, approved Airplane Flight Manual.
- C — An Owner's Manual.

20. Which is required to operate an aircraft towing an advertising banner?

- A — Approval from ATC to operate in Class E airspace.
- B — A certificate of waiver issued by the Administrator.
- C — A safety link at each end of the towline which has a breaking strength not less than 80 percent of the aircraft's gross weight.

21. Which is required equipment for powered aircraft during VFR night flights?

- A — Flashlight with red lens, if the flight is for hire.
- B — An electric landing light, if the flight is for hire.
- C — Sensitive altimeter adjustable for barometric pressure.

22. Which is true with respect to formation flights? Formation flights are

- A — not authorized, except by arrangement with the pilot in command of each aircraft.
- B — not authorized, unless the pilot in command of each aircraft is trained and found competent in formation.
- C — authorized when carrying passengers for hire, with prior arrangement with the pilot in command of each aircraft in the formation.

23. The required preflight action relative to weather reports and fuel requirements is applicable to

- A — any flight conducted for compensation or hire.
- B — any flight not in the vicinity of an airport.
- C — IFR flights only.

24. VFR cruising altitudes are required to be maintained when flying

- A — at 3,000 feet or more AGL; based on true course.
- B — more than 3,000 feet AGL; based on magnetic course.
- C — at 3,000 feet or more above MSL; based on magnetic heading.

25. (Refer to Figure 51 on page 150.) While clearing an active runway you are most likely clear of the ILS critical area when you pass which symbol?

- A — Top red.
- B — Middle yellow.
- C — Bottom yellow.

STAGE TWO KNOWLEDGE TEST - SINGLE-ENGINE

1. An airplane descends to an airport under the following conditions:

Cruising altitude	6,500 ft
Airport elevation	700 ft
Descends to	800 ft AGL
Rate of descent	500 ft/min
Average true airspeed	110 kts
True course	335°
Average wind velocity	060° at 15 kts
Variation	3°W
Deviation	+2°
Average fuel consumption	8.5 gal/hr

Determine the approximate time, compass heading, distance, and fuel consumed during the descent.

- A — 10 minutes, 348°, 18 NM, 1.4 gallons.
- B — 10 minutes, 355°, 17 NM, 2.4 gallons.
- C — 12 minutes, 346°, 18 NM, 1.6 gallons.

2. An airplane descends to an airport under the following conditions:

Cruising altitude	10,500 ft
Airport elevation	1,700 ft
Descends to	1,000 ft AGL
Rate of descent	600 ft/min
Average true airspeed	135 kts
True course	263°
Average wind velocity	330° at 30 kts
Variation	7°E
Deviation	+3°
Average fuel consumption	11.5 gal/hr

Determine the approximate time, compass heading, distance, and fuel consumed during the descent.

- A — 9 minutes, 274°, 26 NM, 2.8 gallons.
- B — 13 minutes, 274°, 28 NM, 2.5 gallons.
- C — 13 minutes, 271°, 26 NM, 2.5 gallons.

3. (Refer to Figure 17 on page 145.) Which is true regarding illustration 4, if the present heading is maintained? The airplane will

- A — cross the 060 radial at a 15° angle.
- B — intercept the 240 radial at a 30° angle.
- C — cross the 180 radial at a 75° angle.

4. The remarks section of the Aviation Routine Weather Report (METAR) contains the following coded information. What does it mean?

RMK FZDZB42 WSHFT 30 FROPA

- A — Freezing drizzle with cloud bases below 4,200 feet.
- B — Freezing drizzle below 4,200 feet and wind shear.
- C — Wind shift at three zero due to frontal passage.

5. To best determine observed weather conditions between weather reporting stations, the pilot should refer to

- A — pilot reports.
- B — Area Forecasts.
- C — prognostic charts.

6. Hypoxia is the result of which of these conditions?

- A — Excessive oxygen in the bloodstream.
- B — Insufficient oxygen reaching the brain.
- C — Excessive carbon dioxide in the bloodstream.

7. True course measurements on a Sectional Aeronautical Chart should be made at a meridian near the midpoint of the course because the

- A — values of isogonic lines change from point to point.
- B — angles formed by isogonic lines and lines of latitude vary from point to point.
- C — angles formed by lines of longitude and the course line vary from point to point.

8. The basic drive for a pilot to demonstrate the “right stuff” can have an adverse effect on safety, by

- A — a total disregard for any alternative course of action.
- B — generating tendencies that lead to practices that are dangerous, often illegal, and may lead to a mishap.
- C — allowing events, or the situation, to control his or her actions.

9. Which is true regarding preheating an aircraft during cold weather operations?

- A — The cabin area as well as the engine should be preheated.
- B — The cabin area should not be preheated with portable heaters.
- C — Hot air should be blown directly at the engine through the air intakes.

10. Which would decrease the stability of an air mass?

- A — Warming from below.
- B — Cooling from below.
- C — Decrease in water vapor.

11. Convective currents are most active on warm summer afternoons when winds are

- A — light.
- B — moderate.
- C — strong.

- 12.** One of the most dangerous features of mountain waves is the turbulent areas in and
- A — below rotor clouds.
 - B — above rotor clouds.
 - C — below lenticular clouds.
- 13.** When checking the course sensitivity of a VOR receiver, how many degrees should the OBS be rotated to move the CDI from the center to the last dot on either side?
- A — 5° to 10°.
 - B — 10° to 12°.
 - C — 18° to 20°.
- 14.** Which correctly describes the purpose of convective SIGMETs (WST)?
- A — They consist of an hourly observation of tornadoes, significant thunderstorm activity, and large hailstone activity.
 - B — They contain both an observation and a forecast of all thunderstorm and hailstone activity. The forecast is valid for 1 hour only.
 - C — They consist of either an observation and a forecast or just a forecast for tornadoes, significant thunderstorm activity, or hail greater than or equal to 3/4 inch in diameter.
- 15.** Which conditions are favorable for the formation of a surface based temperature inversion?
- A — Clear, cool nights with calm or light wind.
 - B — Area of unstable air rapidly transferring heat from the surface.
 - C — Broad areas of cumulus clouds with smooth, level bases at the same altitude.
- 16.** Which statement is true about isogonic lines?
- A — Isogonic lines are lines of equal variation.
 - B — Isogonic lines do not vary for different headings of the same aircraft.
 - C — Varies over time as the Agonic line shifts.
- 17.** Which would most likely result in hyperventilation?
- A — Insufficient oxygen.
 - B — Excessive carbon monoxide.
 - C — Insufficient carbon dioxide.
- 18.** Effective navigation by means of GPS includes
- A — determining the current status of all databases.
 - B — ensuring that ATC approves your planned route.
 - C — relying solely on the GPS for course information.
- 19.** The most severe weather conditions, such as destructive winds, heavy hail, and tornadoes, are generally associated with
- A — slow-moving warm fronts which slope above the tropopause.
 - B — squall lines.
 - C — fast-moving occluded fronts.
- 20.** Alert Areas are special use airspace depicted within magenta lines on sectional charts in which
- A — there is a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.
 - B — the flight of aircraft is prohibited.
 - C — the flight of aircraft, while not prohibited, is subject to restriction.
- 21.** When taxiing during strong quartering tailwinds, which aileron positions should be used?
- A — Neutral.
 - B — Aileron up on the side from which the wind is blowing.
 - C — Aileron down on the side from which the wind is blowing.
- 22.** Which is true regarding the development of convective circulation?
- A — Cool air must sink to force the warm air upward.
 - B — Warm air is less dense and rises on its own accord.
 - C — Warmer air covers a larger surface area than the cool air; therefore, the warmer air is less dense and rises.
- 23.** During the life cycle of a thunderstorm, which stage is characterized predominately by downdrafts?
- A — Mature.
 - B — Developing.
 - C — Dissipating.
- 24.** A pilot is entering an area where significant clear air turbulence has been reported. Which action is appropriate upon encountering the first ripple?
- A — Maintain altitude and airspeed.
 - B — Adjust airspeed to that recommended for rough air.
 - C — Enter a shallow climb or descent at maneuvering speed.
- 25.** During an approach, the most important and most easily recognized means of being alerted to possible wind shear is monitoring the
- A — amount of trim required to relieve control pressures.
 - B — heading changes necessary to remain on the runway centerline.
 - C — power and vertical velocity required to remain on the proper glidepath.

END-OF-COURSE KNOWLEDGE TEST - SINGLE-ENGINE

1. (Refer to Figure 17 on page 145.) Which illustration indicates that the airplane should be turned 150° left to intercept the 360 radial at a 60° angle inbound?

- A — 1.
- B — 2.
- C — 3.

2. (Refer to Figure 2 on page 141.) Select the correct statement regarding stall speeds. The airplane will stall

- A — 10 knots higher in a power-on, 60° bank, with gear and flaps up, than with gear and flaps down.
- B — 25 knots lower in a power-off, flaps-up, 60° bank, than in a power-off, flaps-down, wings-level configuration.
- C — 10 knots higher in a 45° bank, power-on stall, than in a wings-level stall with flaps up.

3. An airplane departs an airport under the following conditions:

Airport elevation	1000 ft
Cruise altitude	9,500 ft
Rate of climb	500 ft/min
Average true airspeed	135 kts
True course	215°
Average wind velocity	290° at 20 kts
Variation	3° W
Deviation	-2°
Average fuel consumption	13 gal/hr

Determine the approximate time, compass heading, distance, and fuel consumed during the climb.

- A — 14 minutes, 234°, 26 NM, 3.9 gallons.
- B — 17 minutes, 224°, 36 NM, 3.7 gallons.
- C — 17 minutes, 242°, 31 NM, 3.5 gallons.

4. (Refer to Figure 35 on page 149.)

GIVEN:

Temperature	70°F
Pressure altitude	Sea level
Weight	3,400 lb
Headwind	16 kts

Determine the approximate ground roll.

- A — 689 feet.
- B — 716 feet.
- C — 1,275 feet.

5. (Refer to Figure 32 on page 146.)

GIVEN:

Temperature	50°F
Pressure altitude	2,000 ft
Weight	2,700 lb
Wind	Calm

What is the total takeoff distance over a 50-foot obstacle?

- A — 800 feet.
- B — 650 feet.
- C — 1,050 feet.

6. (Refer to Figure 15 on page 144.)

GIVEN:

Airport pressure altitude	4,000 ft
Airport temperature	12°C
Cruise pressure altitude	9,000 ft
Cruise temperature	-4°C

What will be the distance required to climb to cruise altitude under the given conditions?

- A — 6 miles.
- B — 8.5 miles.
- C — 11 miles.

7. (Refer to Figure 34 on page 148.)

GIVEN:

Pressure altitude	6,000 ft
Temperature	+3°C
Power	2,200 RPM – 22" MP
Usable fuel available	465 lb

What is the maximum available flight time under the conditions stated?

- A — 6 hours 27 minutes.
- B — 6 hours 39 minutes.
- C — 6 hours 56 minutes.

8. (Refer to Figure 8 on page 143.)

GIVEN:

Fuel quantity	47 gal
Power-cruise (lean)	55 percent

Approximately how much flight time would be available with a night VFR fuel reserve remaining?

- A — 3 hours 8 minutes.
- B — 3 hours 22 minutes.
- C — 3 hours 43 minutes.

9. If an airplane is consuming 95 pounds of fuel per hour at a cruising altitude of 6,500 feet and the groundspeed is 173 knots, how much fuel is required to travel 450 NM?

- A — 248 pounds.
- B — 265 pounds.
- C — 284 pounds.

10. GIVEN:

True course	105°
True heading	085°
True airspeed	95 kts
Groundspeed	87 kts

Determine the wind direction and speed.

- A — 020° and 32 knots.
- B — 030° and 38 knots.
- C — 200° and 32 knots.

11. (Refer to Figure 11 on page 142.) If the cruise altitude is 7,500 feet, using 64 percent power at 2,500 RPM, what would be the range with 48 gallons of usable fuel?

- A — 635 miles.
- B — 645 miles.
- C — 810 miles.

12. What are some of the hazardous attitudes dealt with in Aeronautical Decision Making (ADM)?

- A — Antiauthority (don't tell me), impulsivity (do something quickly without thinking), macho (I can do it).
- B — Risk management, stress management, and risk elements.
- C — Poor decision making, situational awareness, and judgment.

13. Refer to the excerpt from the following METAR report:

KTUS.....08004KT 4SM HZ26/04 A2995 RMK RAE36

At approximately what altitude AGL should bases of convective-type cumuliform clouds be expected?

- A — 4,400 feet.
- B — 8,800 feet.
- C — 17,600 feet.

14. What significant cloud coverage is reported by this pilot report?

KMOB

UA/OV 15NW MOB 1340Z/SK OVC 025/045 OVC 090

- A — Three (3) separate overcast layers exist with bases at 250, 7,500, and 9,000 feet.
- B — The top of the lower overcast is 2,500 feet; base and top of second overcast layer are 4,500 and 9,000 feet, respectively.
- C — The base of the second overcast layer is 2,500 feet; top of second overcast layer is 7,500 feet; base of third layer is 9,000 feet.

15. The station originating the following METAR observation has a field elevation of 3,500 feet MSL. If the sky cover is one continuous layer, what is the thickness of the cloud layer? (Top of overcast reported at 7,500 feet MSL.)

METAR KHOB 151250Z 17006KT 4SM OVC005 13/11 A2998

- A — 2,500 feet.
- B — 3,500 feet.
- C — 4,000 feet.

16. What is meant by the Special METAR weather observation for KBOI?

SPECI KBOI 091854Z 32005KT 1 1/2SM RA BR OVC007 17/16 A2990 RMK RAB12

- A — Rain and fog obscuring two-tenths of the sky; rain began at 1912Z.
- B — Rain and mist obstructing visibility; rain began at 1812Z.
- C — Rain and overcast at 1,200 feet AGL.

17. What weather phenomenon is implied within an area enclosed by small scalloped lines on a U.S. High-Level Significant Weather Prognostic Chart?

- A — Cirriform clouds, light to moderate turbulence, and icing.
- B — Cumulonimbus clouds, icing, and moderate or greater turbulence.
- C — Cumuliform or standing lenticular clouds, moderate to severe turbulence, and icing.

18. (Refer to Figure 5 on page 142.) The horizontal dashed line from point C to point E represents the

- A — ultimate load factor.
- B — positive limit load factor.
- C — airspeed range for normal operations.

19. The jet stream and associated clear air turbulence can sometimes be visually identified in flight by

- A — dust or haze at flight level.
- B — long streaks of cirrus clouds.
- C — a constant outside air temperature.

20. (Refer to Figure 33 on page 147.)

GIVEN:

Weight	4,000 lb
Pressure altitude	5,000 ft
Temperature	30°C

What is the maximum rate of climb under the given conditions?

- A — 655 ft/min.
- B — 702 ft/min.
- C — 774 ft/min.

21. Which situation would result in reverse sensing of a VOR receiver?

- A — Flying a heading that is reciprocal to the bearing selected on the OBS.
- B — Setting the OBS to a bearing that is 90° from the bearing on which the aircraft is located.
- C — Failing to change the OBS from the selected inbound course to the outbound course after passing the station.

22. Most pilots have fallen prey to dangerous tendencies or behavior problems at some time. Some of these dangerous tendencies or behavior patterns which must be identified and eliminated include

- A — Deficiencies in instrument skills and knowledge of aircraft systems or limitations.
- B — Performance deficiencies from human factors such as fatigue, illness, or emotional problems.
- C — Peer pressure, get-there-itis, loss of positional or situational awareness, and operating without adequate fuel reserves.

23. The pilot and passengers are anxious to get to their destination for a business presentation. Level IV thunderstorms are reported to be in a line across their intended route of flight. Which of the following alternatives best illustrates the IMPULSIVITY reaction?

- A — They want to hurry and get going, before things get worse.
- B — A thunderstorm won't stop them.
- C — They can't change the weather, so they might as well go.

24. No person may operate an aircraft that has an experimental airworthiness certificate

- A — under instrument flight rules (IFR).
- B — when carrying property for hire.
- C — when carrying persons or property for hire.

25. The need to slow an aircraft below V_A is brought about by the following weather phenomenon:

- A — High density altitude which increases the indicated stall speed.
- B — Turbulence which causes an increase in stall speed.
- C — Turbulence which causes a decrease in stall speed.

26. An airplane is loaded to a gross weight of 4,800 pounds, with three pieces of luggage in the rear baggage compartment. The CG is located 98 inches aft of datum, which is 1 inch aft of limits. If luggage which weighs 90 pounds is moved from the rear baggage compartment (145 inches aft of datum) to the front compartment (45 inches aft of datum), what is the new CG?

- A — 96.13 inches aft of datum.
- B — 95.50 inches aft of datum.
- C — 99.87 inches aft of datum.

27. An aircraft is loaded with a ramp weight of 3,650 pounds and having a CG of 94.0, approximately how much baggage would have to be moved from the rear baggage area at station 180 to the forward baggage area at station 40 in order to move the CG to 92.0?

- A — 52.14 pounds.
- B — 62.24 pounds.
- C — 78.14 pounds.

28. When should pilots decline a "land and hold short" (LAHSO) clearance?

- A — When it will compromise safety.
- B — If runway surface is contaminated.
- C — Only when the tower controller concurs.

29. When approaching to land at an airport without an operating control tower, in Class G airspace, the pilot should

- A — make all turns to the left, unless otherwise indicated.
- B — fly a left-hand traffic pattern at 800 feet AGL.
- C — enter and fly a traffic pattern at 800 feet AGL.

30. If the minimum safe speed for any particular operation is greater than the maximum speed prescribed in 14 CFR Part 91, the

- A — operator must have a Memorandum of Agreement (MOA) with the controlling agency.
- B — aircraft may be operated at that speed.
- C — operator must have a Letter of Agreement with ATC.

31. A coded transponder equipped with altitude reporting equipment is required for

- A — Class A, Class B, and Class C airspace areas.
- B — all airspace of the 48 contiguous U.S. and the District of Columbia at and above 10,000 feet MSL (including airspace at and below 2,500 feet above the surface).
- C — both of the other answers.

32. Which is true regarding flight operations in Class A airspace?

- A — Aircraft must be equipped with approved distance measuring equipment (DME).
- B — Must conduct operations under instrument flight rules.
- C — Aircraft must be equipped with an approved ATC transponder.

33. To operate an airplane under SPECIAL VFR (SVFR) within Class D airspace at night, which is required?

- A — The pilot must hold an instrument rating, but the airplane need not be equipped for instrument flight, as long as the weather will remain at or above SVFR minimums.
- B — The Class D airspace must be specifically designated as a night SVFR area.
- C — The pilot must hold an instrument rating, and the airplane must be equipped for instrument flight.

34. A proper crosswind landing on a runway requires that, at the moment of touchdown, the

- A — direction of motion of the airplane and its lateral axis be perpendicular to the runway.
- B — direction of motion of the airplane and its longitudinal axis be parallel to the runway.
- C — downwind wing be lowered sufficiently to eliminate the tendency for the airplane to drift.

35. Which is true with respect to a high- or low-pressure system?

- A — A high-pressure area or ridge is an area of rising air.
- B — A low-pressure area or trough is an area of descending air.
- C — A high-pressure area or ridge is an area of descending air.

36. To scan properly for traffic, a pilot should

- A — slowly sweep the field of vision from one side to the other at intervals.
- B — concentrate on any peripheral movement detected.
- C — use a series of short, regularly spaced eye movements that bring successive areas of the sky into the central visual field.

37. In the Northern Hemisphere, the wind is deflected to the

- A — right by Coriolis force.
- B — right by surface friction.
- C — left by Coriolis force.

38. Which is true regarding the presence of alcohol within the human body?

- A — A small amount of alcohol increases vision acuity.
- B — An increase in altitude decreases the adverse effect of alcohol.
- C — Judgment and decision-making abilities can be adversely affected by even small amounts of alcohol.

39. Which statement is true concerning the effect of the application of carburetor heat?

- A — It enriches the fuel/air mixture.
- B — It leans the fuel/air mixture.
- C — It has no effect on the fuel/air mixture.

40. A pilot's most immediate and vital concern in the event of complete engine failure after becoming airborne on takeoff is

- A — maintaining a safe airspeed.
- B — landing directly into the wind.
- C — turning back to the takeoff field.

41. When diverting to an alternate airport because of an emergency, pilots should

- A — rely upon radio as the primary method of navigation.
- B — climb to a higher altitude because it will be easier to identify checkpoints.
- C — apply rule-of-thumb computations, estimates, and other appropriate shortcuts to divert to the new course as soon as possible.

42. Which statement is true about magnetic deviation of a compass? Deviation

- A — varies over time as the agonic line shifts.
- B — varies for different headings of the same aircraft.
- C — is the same for all aircraft in the same locality.

43. Name the four fundamentals involved in maneuvering an aircraft.

- A — Power, pitch, bank, and trim.
- B — Thrust, lift, turns, and glides.
- C — Straight-and-level flight, turns, climbs, and descents.

44. With respect to advection fog, which statement is true?

- A — It is slow to develop and dissipates quite rapidly.
- B — It forms almost exclusively at night or near daybreak.
- C — It can appear suddenly during day or night, and it is more persistent than radiation fog.

45. To generate the same amount of lift as altitude is increased, an airplane must be flown at

- A — the same true airspeed regardless of angle of attack.
- B — a lower true airspeed and a greater angle of attack.
- C — a higher true airspeed for any given angle of attack.

46. While holding the angle of bank constant in a level turn, if the rate of turn is varied the load factor would

- A — remain constant regardless of air density and the resultant lift vector.
- B — vary depending upon speed and air density provided the resultant lift vector varies proportionately.
- C — vary depending upon the resultant lift vector.

47. Turbulence that is encountered above 15,000 feet AGL not associated with cumuliform cloudiness, including thunderstorms, should be reported as

- A — severe turbulence.
- B — clear air turbulence.
- C — convective turbulence.

48. When turbulence is encountered during the approach to a landing, what action is recommended and for what primary reason?

- A — Increase the airspeed slightly above normal approach speed to attain more positive control.
- B — Decrease the airspeed slightly below normal approach speed to avoid overstressing the airplane.
- C — Increase the airspeed slightly above normal approach speed to penetrate the turbulence as quickly as possible.

49. To help manage cockpit stress, pilots must

- A — be aware of life stress situations that are similar to those in flying.
- B — condition themselves to relax and think rationally when stress appears.
- C — avoid situations that will degrade their abilities to handle cockpit responsibilities.

50. How should the pilot make a VOR receiver check when the aircraft is located on the designated checkpoint on the airport surface?

- A — Set the OBS on 180° plus or minus 4°; the CDI should center with a FROM indication.
- B — Set the OBS on the designated radial. The CDI must center within plus or minus 4° of that radial with a FROM indication.
- C — With the aircraft headed directly toward the VOR and the OBS set to 000°, the CDI should center within plus or minus 4° of that radial with a TO indication.

51. When the CDI needle is centered during an airborne VOR check, the omnibearing selector and the TO/FROM indicator should read

- A — within 4° of the selected radial.
- B — within 6° of the selected radial.
- C — 0° TO, only if you are due south of the VOR.

52. What flight planning information can a pilot derive from Constant Pressure Analysis Charts?

- A — Winds and temperatures aloft.
- B — Clear air turbulence and icing conditions.
- C — Frontal systems and obstructions to vision aloft.

53. The Surface Analysis Chart depicts

- A — frontal locations and expected movement, pressure centers, cloud coverage, and obstructions to vision at the time of chart transmission.
- B — actual frontal positions, pressure patterns, temperature, dewpoint, wind, weather, and obstructions to vision at the valid time of the chart.
- C — actual pressure distribution, frontal systems, cloud heights and coverage, temperature, dewpoint, and wind at the time shown on the chart.

54. Dashed lines on a Surface Analysis Chart, if depicted, indicate that the pressure gradient is

- A — weak.
- B — strong.
- C — unstable.

55. Terminal Aerodrome Forecasts (TAF) are issued how many times a day and cover what period of time?

- A — Four times daily and are usually valid for a 24-hour period.
- B — Six times daily and are usually valid for a 24-hour period including a 4-hour categorical outlook.
- C — Six times daily and are valid for 12 hours including a 6-hour categorical outlook.

56. What type of In-Flight Weather Advisories provides an en route pilot with information regarding the possibility of moderate icing, moderate turbulence, winds of 30 knots or more at the surface and extensive mountain obscurement?

- A — Convective SIGMETs and SIGMETs.
- B — Severe Weather Forecast Alerts (AWWs) and SIGMETs.
- C — AIRMETs and Center Weather Advisories (CWAs).

57. The strength and location of the jet stream is normally

- A — weaker and farther north in the summer.
- B — stronger and farther north in the winter.
- C — stronger and farther north in the summer.

58. Which is true regarding the use of flaps during level turns?

- A — The lowering of flaps increases the stall speed.
- B — The raising of flaps increases the stall speed.
- C — Raising flaps will require added forward pressure on the yoke or stick.

- 59.** To track outbound on the 180 radial of a VOR station, the recommended procedure is to set the OBS to
- A — 360° and make heading corrections toward the CDI needle.
 - B — 180° and make heading corrections away from the CDI needle.
 - C — 180° and make heading corrections toward the CDI needle.
- 60.** To track inbound on the 215 radial of a VOR station, the recommended procedure is to set the OBS to
- A — 215° and make heading corrections toward the CDI needle.
 - B — 215° and make heading corrections away from the CDI needle.
 - C — 035° and make heading corrections toward the CDI needle.
- 61.** Which is correct with respect to rate and radius of turn for an airplane flown in a coordinated turn at a constant altitude?
- A — For a specific angle of bank and airspeed, the rate and radius of turn will not vary.
 - B — To maintain a steady rate of turn, the angle of bank must be increased as the airspeed is decreased.
 - C — The faster the true airspeed, the faster the rate and larger the radius of turn regardless of the angle of bank.
- 62.** In aircraft equipped with constant-speed propellers and normally-aspirated engines, which procedure should be used to avoid placing undue stress on the engine components? When power is being
- A — decreased, reduce the RPM before reducing the manifold pressure.
 - B — increased, increase the RPM before increasing the manifold pressure.
 - C — increased or decreased, the RPM should be adjusted before the manifold pressure.
- 63.** What performance is characteristic of flight at maximum lift/drag ratio in a propeller-driven airplane? Maximum
- A — gain in altitude over a given distance.
 - B — range and maximum distance glide.
 - C — coefficient of lift and minimum coefficient of drag.
- 64.** The reason for variations in geometric pitch (twisting) along a propeller blade is that it
- A — permits a relatively constant angle of incidence along its length when in cruising flight.
 - B — prevents the portion of the blade near the hub from stalling during cruising flight.
 - C — permits a relatively constant angle of attack along its length when in cruising flight.
- 65.** Why should pilots understand how to cancel entries made on a GPS?
- A — Because GPS units frequently provide wrong or false information.
 - B — Because heavy workloads and turbulence can increase data entry errors.
 - C — Because published route names commonly change.
- 66.** Which button/feature provides information on the closest airport at any given time?
- A — Direct-to.
 - B — Nearest.
 - C — Flight plan.
- 67.** The mixture control can be adjusted, which
- A — prevents the fuel/air combination from becoming too rich at higher altitudes.
 - B — regulates the amount of airflow through the carburetor's venturi.
 - C — prevents the fuel/air combination from becoming lean as the airplane climbs.
- 68.** Detonation occurs in a reciprocating aircraft engine when
- A — there is an explosive increase of fuel caused by too rich a fuel/air mixture.
 - B — the spark plugs receive an electrical jolt caused by a short in the wiring.
 - C — the unburned fuel/air charge in the cylinders is subjected to instantaneous combustion.
- 69.** While taxiing on the parking ramp, the landing gear, wheel, and tire are damaged by striking ground equipment. What action would be required to comply with NTSB Part 830?
- A — An immediate notification must be filed by the operator of the aircraft with the nearest NTSB field office.
 - B — A report must be filed with the nearest FAA field office within 7 days.
 - C — No notification or report is required.
- 70.** The operator of an aircraft that has been involved in an incident is required to submit a report to the nearest field office of the NTSB
- A — within 7 days.
 - B — within 10 days.
 - C — only if requested to do so.
- 71.** After an annual inspection has been completed and the aircraft has been returned to service, an appropriate notation should be made
- A — on the airworthiness certificate.
 - B — in the aircraft maintenance records.
 - C — in the FAA-approved flight manual.

72. Who is primarily responsible for maintaining an aircraft in an airworthy condition?

- A — The lead mechanic responsible for that aircraft.
- B — Pilot in command or operator.
- C — Owner or operator of the aircraft.

73. Does a commercial pilot certificate have a specific expiration date?

- A — No, it is issued without an expiration date.
- B — Yes, it expires at the end of the 24th month after the month in which it was issued.
- C — No, but commercial privileges expire if a flight review is not satisfactorily completed each 12 months.

74. When operating a U.S.-registered civil aircraft, which document is required by regulation to be available in the aircraft?

- A — A manufacturer's Operations Manual.
- B — A current, approved Airplane Flight Manual.
- C — An Owner's Manual.

75. The pilot in command of an aircraft operated under IFR, in controlled airspace, shall report as soon as practical to ATC when

- A — climbing or descending to assigned altitudes.
- B — experiencing any malfunctions of navigational, approach, or communications equipment, occurring in flight.
- C — requested to contact a new controlling facility.

76. An airplane is overtaking a helicopter. Which aircraft has the right-of-way?

- A — Helicopter; the pilot should expect to be passed on the right.
- B — Airplane; the airplane pilot should alter course to the left to pass.
- C — Helicopter; the pilot should expect to be passed on the left.

77. During a night operation, the pilot of aircraft #1 sees only the green light of aircraft #2. If the aircraft are converging, which pilot has the right-of-way? The pilot of aircraft

- A — #2; aircraft #2 is to the left of aircraft #1.
- B — #2; aircraft #2 is to the right of aircraft #1.
- C — #1; aircraft #1 is to the right of aircraft #2.

78. NTSB Part 830 requires an immediate notification as a result of which incident?

- A — Engine failure for any reason during flight.
- B — Damage to the landing gear as a result of a hard landing.
- C — Any required flight crewmember being unable to perform flight duties because of illness.

79. Which is true with respect to formation flights? Formation flights are

- A — authorized when carrying passengers for hire, with prior arrangement with the pilot in command of each aircraft in the formation.
- B — not authorized when visibilities are less than 3 SM.
- C — not authorized when carrying passengers for hire.

80. What is the maximum indicated airspeed authorized in the airspace underlying Class B airspace?

- A — 156 knots.
- B — 200 knots.
- C — 230 knots.

81. At some airports located in Class D airspace where ground visibility is not reported, takeoffs and landings under special VFR are

- A — not authorized.
- B — authorized by ATC if the flight visibility is at least 1 SM.
- C — authorized only if the ground visibility is observed to be at least 3 SM.

82. When approaching to land at an airport with an ATC facility, in Class D airspace, the pilot must establish communications prior to

- A — 10 NM, up to and including 3,000 feet AGL.
- B — 30 SM, and be transponder equipped.
- C — 4 NM, up to and including 2,500 feet AGL.

83. What person is directly responsible for the final authority as to the operation of the airplane?

- A — Certificate holder.
- B — Pilot in command.
- C — Airplane owner/operator.

84. When is preflight action required, relative to alternatives available, if the planned flight cannot be completed?

- A — IFR flights only.
- B — Any flight not in the vicinity of an airport.
- C — Any flight conducted for hire or compensation.

85. A person with a Commercial Pilot certificate may act as pilot in command of an aircraft for compensation or hire, if that person

- A — is qualified in accordance with 14 CFR part 61 and with the applicable parts that apply to the operation.
- B — is qualified in accordance with 14 CFR part 61 and has passed a pilot competency check given by an authorized check pilot.
- C — holds appropriate category, class ratings, and meets the recent flight experience requirements of 14 CFR part 61.

86. What limitation is imposed on a newly certificated commercial pilot-airplane, if that person does not hold an instrument rating? The carriage of passengers

- A — or property for hire on cross-country flights at night is limited to a radius of 50 NM.
- B — for hire on cross-country flights is limited to 50 NM for night flights, but not limited for day flights.
- C — for hire on cross-country flights in excess of 50 NM, or for hire at night is prohibited.

87. If an aircraft is not equipped with an electrical or anticollision light system, no person may operate that aircraft

- A — after dark.
- B — 1 hour after sunset.
- C — after sunset to sunrise.

88. A pilot convicted of operating a motor vehicle while either intoxicated by, impaired by, or under the influence of alcohol or a drug is required to provide a

- A — written report to the FAA Civil Aeromedical Institute (CAMI) within 60 days after the motor vehicle action.
- B — written report to the FAA Civil Aviation Security Division (AMC-700) not later than 60 days after the conviction.
- C — the notification of the conviction to an FAA Aviation Medical Examiner (AME) not later than 60 days after the motor vehicle action.

89. Each required flight crewmember is required to keep his or her shoulder harness fastened

- A — during takeoff and landing only when passengers are aboard the aircraft.
- B — while the crewmembers are at their stations, unless he or she is unable to perform required duties.
- C — during takeoff and landing, unless he or she is unable to perform required duties.

90. The angle of attack at which a wing stalls remains constant regardless of

- A — weight, dynamic pressure, bank angle, or pitch attitude.
- B — dynamic pressure, but varies with weight, bank angle, and pitch attitude.
- C — weight and pitch attitude, but varies with dynamic pressure and bank angle.

91. With regard to the technique required for a crosswind correction on takeoff, a pilot should use

- A — aileron pressure into the wind and initiate the lift-off at a normal airspeed in both tailwheel- and nosewheel-type airplanes.
- B — right rudder pressure, aileron pressure into the wind, and higher than normal lift-off airspeed in both tricycle- and conventional-gear airplanes.
- C — rudder as required to maintain directional control, aileron pressure into the wind, and higher than normal lift-off airspeed in both conventional- and nosewheel-type airplanes.

92. Frost covering the upper surface of an airplane wing usually will cause

- A — the airplane to stall at an angle of attack that is higher than normal.
- B — the airplane to stall at an angle of attack that is lower than normal.
- C — drag factors so large that sufficient speed cannot be obtained for takeoff.

93. Select the true statement pertaining to the life cycle of a thunderstorm.

- A — Updrafts continue to develop throughout the dissipating stage of a thunderstorm.
- B — The beginning of rain at the Earth's surface indicates the mature stage of the thunderstorm.
- C — The beginning of rain at the Earth's surface indicates the dissipating stage of the thunderstorm.

94. During a takeoff made behind a departing large jet airplane, the pilot can minimize the hazard of wingtip vortices by

- A — being airborne prior to reaching the jet's flightpath until able to turn clear of its wake.
- B — maintaining extra speed on takeoff and climbout.
- C — extending the takeoff roll and not rotating until well beyond the jet's rotation point.

95. When landing behind a large aircraft, which procedure should be followed for vortex avoidance?

- A — Stay above its final approach flightpath all the way to touchdown.
- B — Stay below and to one side of its final approach flightpath.
- C — Stay well below its final approach flightpath and land at least 2,000 feet behind.

96. What is indicated if ice pellets are encountered at 8,000 feet?

- A — Freezing rain at higher altitude.
- B — You are approaching an area of thunderstorms.
- C — You will encounter hail if you continue your flight.

97. The Hazardous Inflight Weather Advisory Service (HIWAS) is a broadcast service over selected VORs that provides

- A — SIGMETs and AIRMETs at 15 minutes and 45 minutes past the hour for the first hour after issuance.
- B — continuous broadcast of inflight weather advisories.
- C — SIGMETs, CONVECTIVE SIGMETs and AIRMETs at 15 minutes and 45 minutes past the hour.

98. What causes wind?

- A — The Earth's rotation.
- B — Air mass modification.
- C — Pressure differences.

99. The minimum vertical wind shear value critical for probable moderate or greater turbulence is

- A — 4 knots per 1,000 feet.
- B — 5 knots per 1,000 feet.
- C — 8 knots per 1,000 feet.

100. GIVEN:

Pressure altitude	5,000 ft
True air temperature	+30°C

From the conditions given, the approximate density altitude is

- A — 7,800 feet.
- B — 7,200 feet.
- C — 9,000 feet.

FIGURES FOR KNOWLEDGE TESTS - SINGLE-ENGINE

GROSS WEIGHT 2,750 LB		ANGLE OF BANK			
		LEVEL	30°	45°	60°
POWER		GEAR AND FLAPS UP			
	ON	MPH	62	67	74
	KTS	54	58	64	76
OFF	MPH	75	81	89	106
	KTS	65	70	77	92
		GEAR AND FLAPS DOWN			
ON	MPH	54	58	64	76
	KTS	47	50	56	66
OFF	MPH	66	71	78	93
	KTS	57	62	68	81

Figure 2. – Stall Speeds.

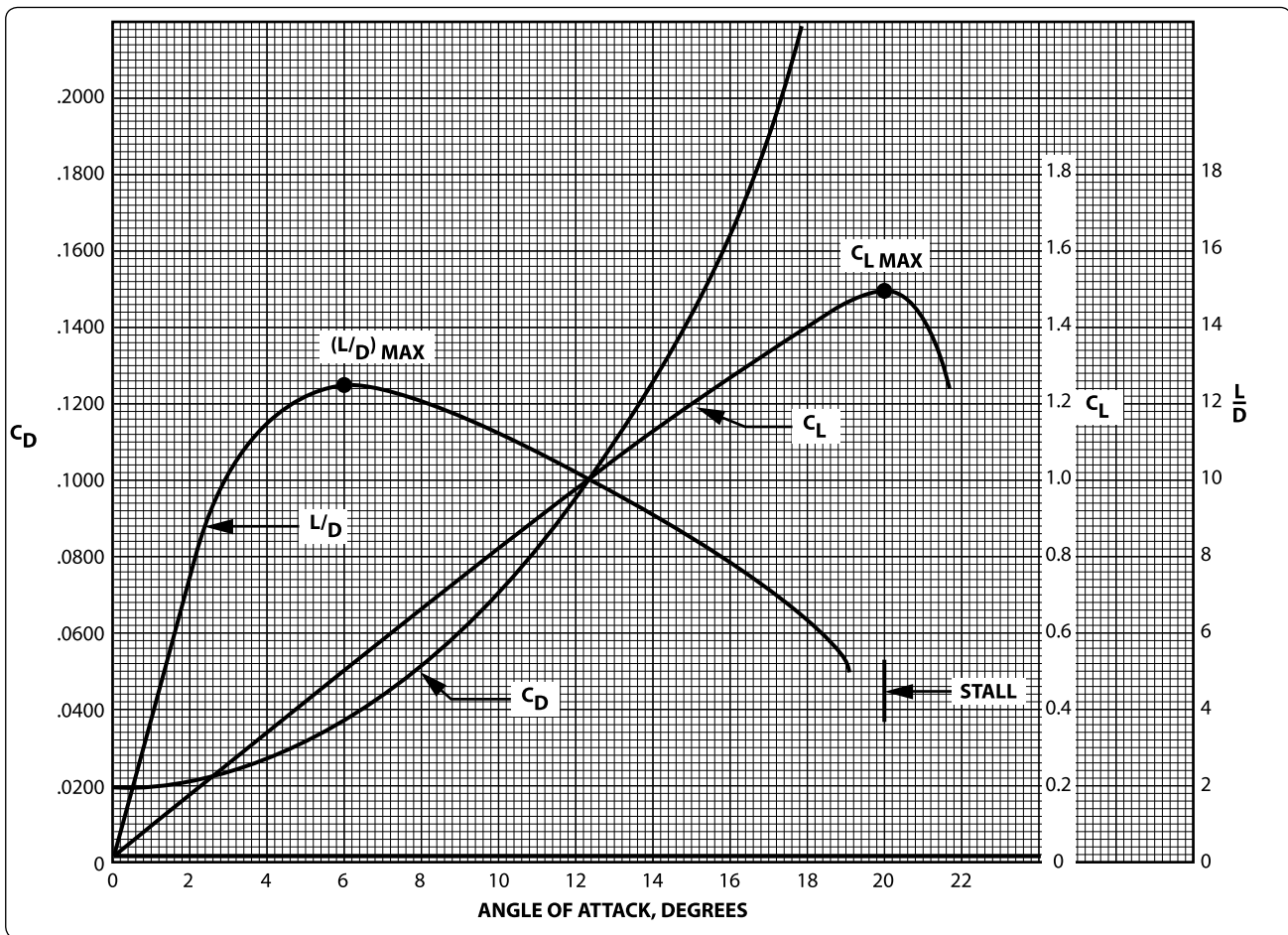


Figure 3. – Angle of Attack vs. Lift.

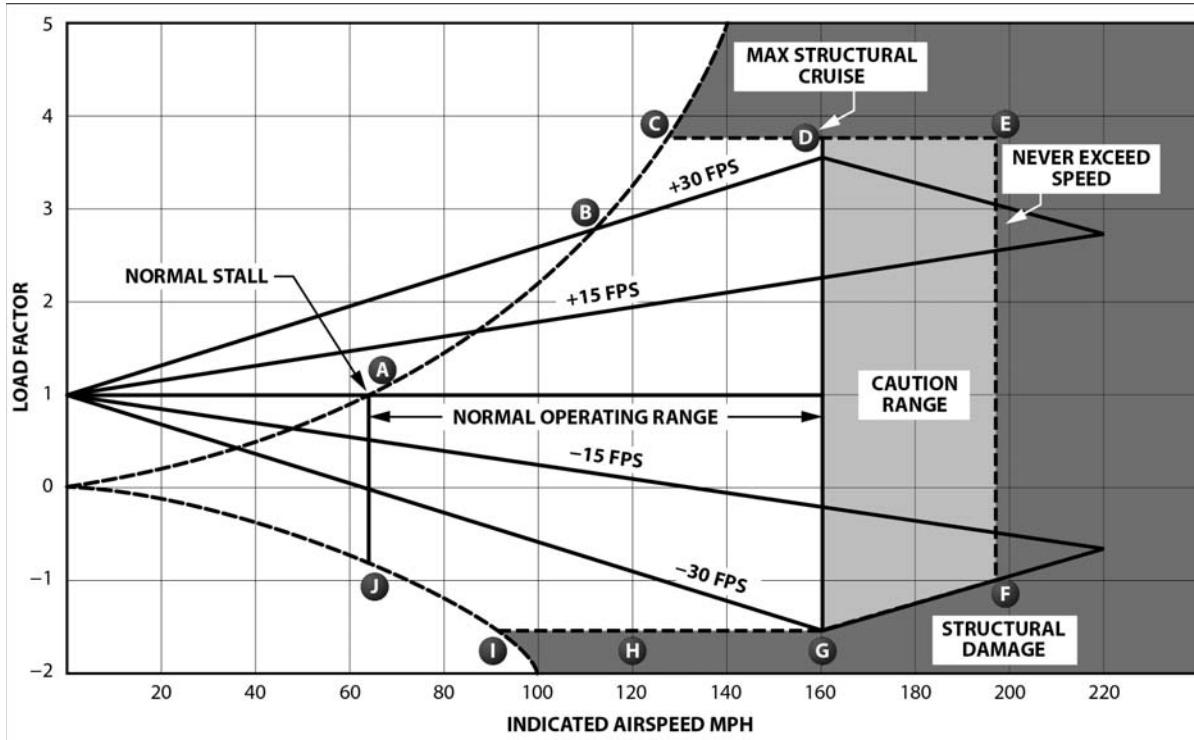


Figure 5. – Velocity vs. Load Factor.

GROSS WEIGHT – 2,300 LB
 STANDARD CONDITIONS
 ZERO WIND LEAN MIXTURE

NOTE: MAXIMUM CRUISE IS NORMALLY LIMITED TO 75% POWER.

ALT.	RPM	% BHP	TAS MPH	GAL/HOUR	38 GAL (NO RESERVE)		48 GAL (NO RESERVE)	
					ENDR (HOURS)	RANGE (MILES)	ENDR (HOURS)	RANGE (MILES)
2,500	2,700	86	134	9.7	3.9	525	4.9	660
	2,600	79	129	8.6	4.4	570	5.6	720
	2,500	72	123	7.8	4.9	600	6.2	760
	2,400	65	117	7.2	5.3	620	6.7	780
	2,300	58	111	6.7	5.7	630	7.2	795
	2,200	52	103	6.3	6.1	625	7.7	790
5,000	2,700	82	134	9.0	4.2	565	5.3	710
	2,600	75	128	8.1	4.7	600	5.9	760
	2,500	68	122	7.4	5.1	625	6.4	790
	2,400	61	116	6.9	5.5	635	6.9	805
	2,300	55	108	6.5	5.9	635	7.4	805
	2,200	49	100	6.0	6.3	630	7.9	795
7,500	2,700	78	133	8.4	4.5	600	5.7	755
	2,600	71	127	7.7	4.9	625	6.2	790
	2,500	64	121	7.1	5.3	645	6.7	810
	2,400	58	113	6.7	5.7	645	7.2	820
	2,300	52	105	6.2	6.1	640	7.7	810
10,000	2,650	70	129	7.6	5.0	640	6.3	810
	2,600	67	125	7.3	5.2	650	6.5	820
	2,500	61	118	6.9	5.5	655	7.0	830
	2,400	55	110	6.4	5.9	650	7.5	825
	2,300	49	100	6.0	6.3	635	8.0	800

Figure 11. – Cruise and Range Performance.

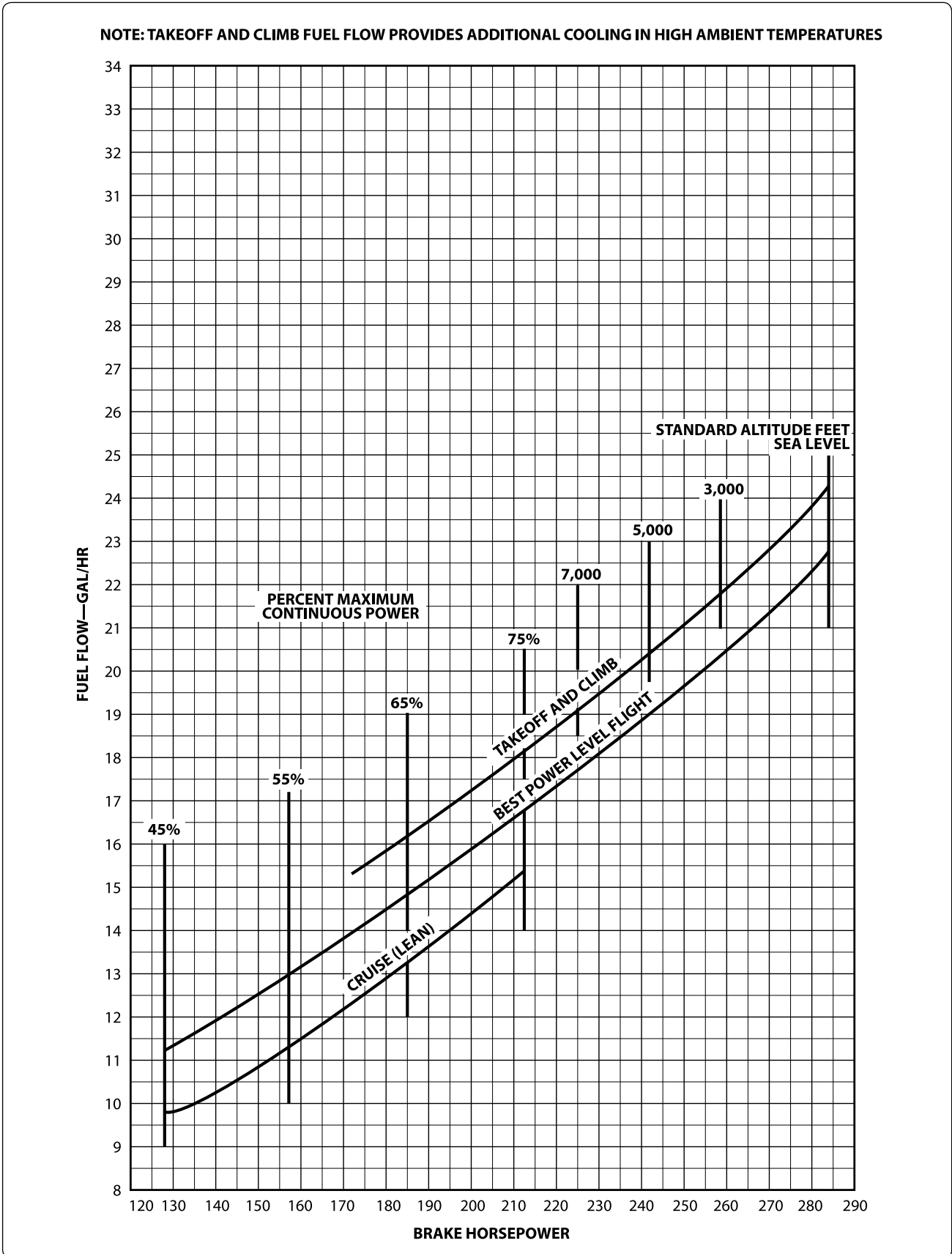


Figure 8. – Fuel Consumption vs. Brake Horsepower.

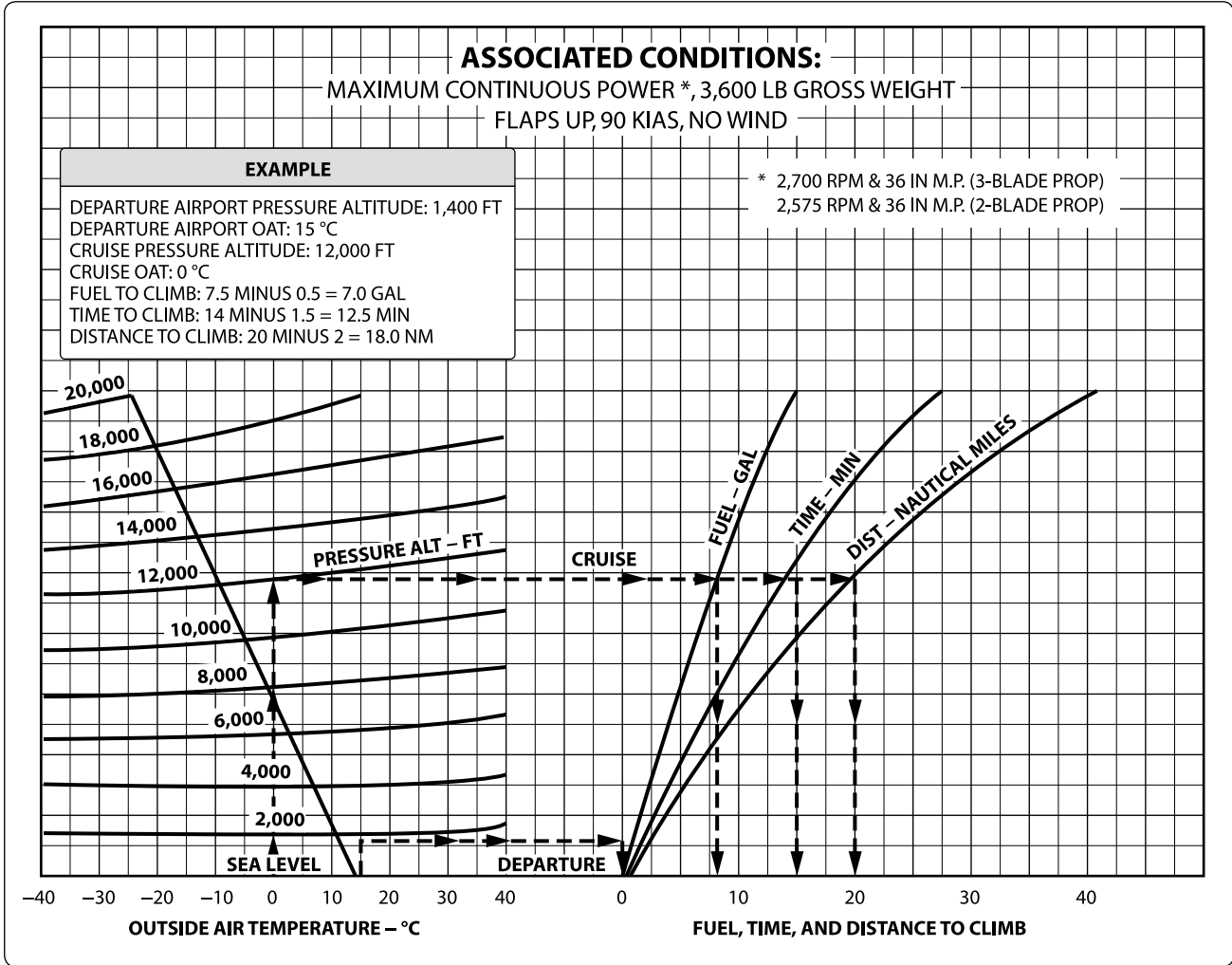


Figure 15. – Fuel, Time, and Distance to Climb.

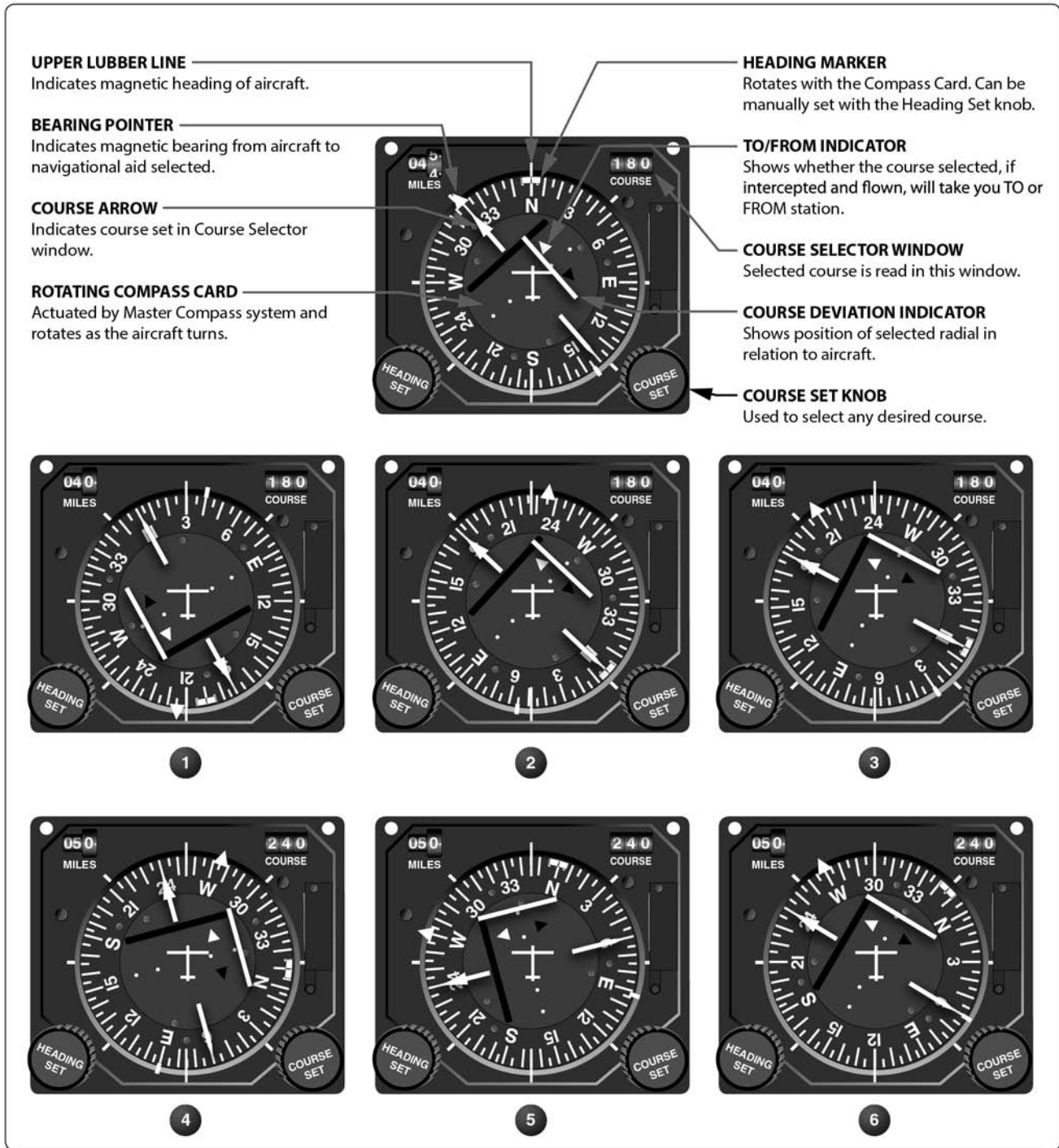


Figure 17. – Horizontal Situation Indicator (HSI).

ASSOCIATED CONDITIONS:

POWER TAKEOFF POWER
 SET BEFORE
 BRAKE RELEASE
 FLAPS 20°
 RUNWAY PAVED, LEVEL, DRY SURFACE
 TAKEOFF SPEED IAS AS TABULATED

NOTE: GROUND ROLL IS APPROX 73% OF TOTAL TAKEOFF
 DISTANCE OVER A 50 FT OBSTACLE

EXAMPLE:

OAT 75 °F
 PRESSURE ALTITUDE 4,000 FT
 TAKEOFF WEIGHT 3,100 LB
 HEADWIND 20 KNOTS

TOTAL TAKEOFF DISTANCE
 OVER A 50 FT OBSTACLE 1,350 FT
 GROUND ROLL (73% OF 1,350) 986 FT
 IAS TAKEOFF SPEED
 LIFT-OFF 74 MPH
 AT 50 FT 74 MPH

WEIGHT (LB)	IAS TAKEOFF SPEED (ASSUMES ZERO INSTR ERROR)			
	LIFT-OFF		50 FEET	
	MPH	KNOTS	MPH	KNOTS
3,400	77	67	77	67
3,200	75	65	75	65
3,000	72	63	72	63
2,800	69	60	69	60
2,600	66	57	66	57
2,400	63	55	63	55

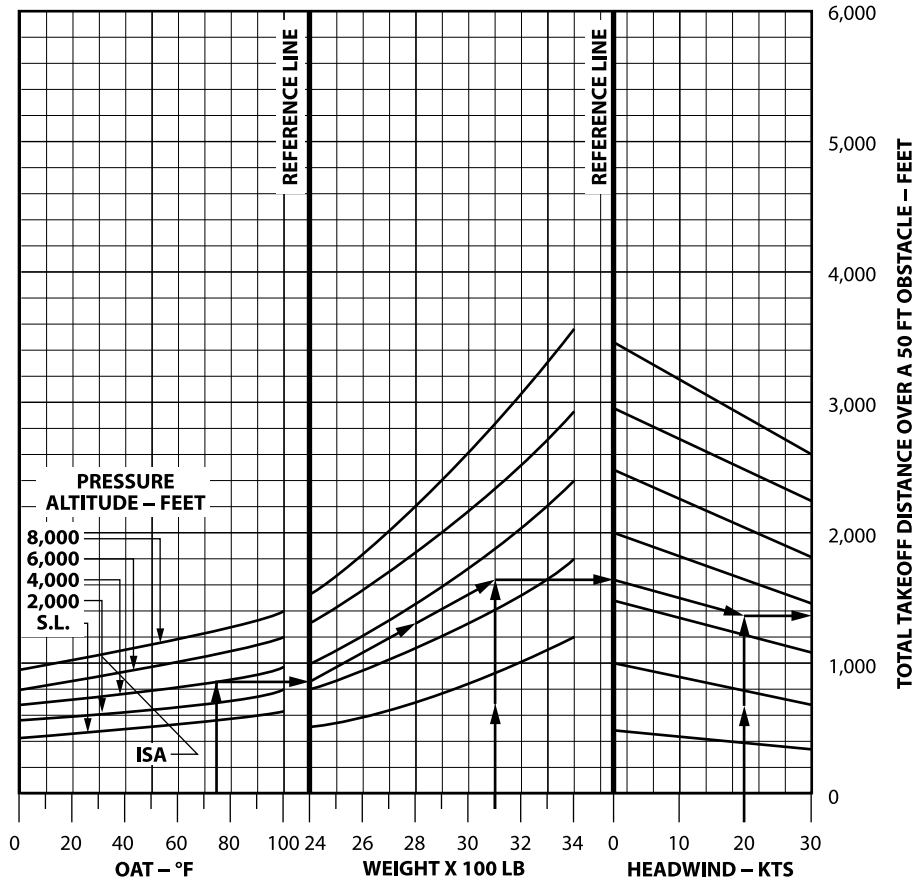


Figure 32. – Obstacle Take-off Chart.

CONDITIONS:

FLAPS UP
 GEAR UP
 2,600 RPM
 COWL FLAPS OPEN

PRESS ALT	MP	PPH
S.L. TO 17,000	35	162
18,000	34	156
20,000	32	144
22,000	30	132
24,000	28	120

WEIGHT (LB)	PRESS ALT (FT)	CLIMB SPEED (KIAS)	RATE OF CLIMB (FPM)			
			-20 °C	0 °C	20 °C	40 °C
4,000	S.L.	100	1,170	1,035	895	755
	4,000	100	1,080	940	800	655
	8,000	100	980	840	695	555
	12,000	100	870	730	590	---
	16,000	100	740	605	470	---
	20,000	99	485	355	---	---
	24,000	97	190	70	---	---
3,700	S.L.	99	1,310	1,165	1,020	875
	4,000	99	1,215	1,070	925	775
	8,000	99	1,115	965	815	670
	12,000	99	1,000	855	710	---
	16,000	99	865	730	590	---
	20,000	97	600	470	---	---
	24,000	95	295	170	---	---
3,400	S.L.	97	1,465	1,320	1,165	1,015
	4,000	97	1,370	1,220	1,065	910
	8,000	97	1,265	1,110	955	795
	12,000	97	1,150	995	845	---
	16,000	97	1,010	865	725	---
	20,000	96	730	595	---	---
	24,000	94	405	275	---	---

Figure 33. – Maximum Rate of Climb Chart.

PRESSURE ALTITUDE 6,000 FEET										
CONDITIONS:										
3,800 POUNDS										
RECOMMENDED LEAN MIXTURE										
COWL FLAPS CLOSED										
		20 °C BELOW STANDARD TEMPERATURE -17 °C			STANDARD TEMPERATURE 3 °C			20 °C ABOVE STANDARD TEMPERATURE 23 °C		
RPM	MP	% BHP	KTAS	PPH	% BHP	KTAS	PPH	% BHP	KTAS	PPH
2,550	24	---	---	---	78	173	97	75	174	94
	23	76	167	96	74	169	92	71	171	89
	22	72	164	90	69	166	87	67	167	84
	21	68	160	85	65	162	82	63	163	80
2,500	24	78	169	98	75	171	95	73	172	91
	23	74	166	93	71	167	90	69	169	87
	22	70	162	88	67	164	85	65	165	82
	21	66	158	83	63	160	80	61	160	77
2,400	24	73	165	91	70	166	88	68	167	85
	23	69	161	87	67	163	84	64	164	81
	22	65	158	82	63	159	79	61	160	77
	21	61	154	77	59	155	75	57	155	73
2,300	24	68	161	86	66	162	83	64	163	80
	23	65	158	82	62	159	79	60	159	76
	22	61	154	77	59	155	75	57	155	72
	21	57	150	73	55	150	71	53	150	68
2,200	24	63	156	80	61	157	77	59	158	75
	23	60	152	76	58	153	73	56	154	71
	22	57	149	72	54	149	70	53	149	67
	21	53	144	68	51	144	66	49	143	64
	20	50	139	64	48	138	62	46	137	60
	19	46	133	60	44	132	58	43	131	57

Figure 34. – Cruise Performance Chart.

ASSOCIATED CONDITIONS:

POWER AS REQUIRED TO MAINTAIN 800 FT/MIN
DESCENT ON APPROACH
FLAPS DOWN
RUNWAY PAVED, LEVEL, DRY SURFACE
APPROACH SPEED IAS AS TABULATED

NOTE: GROUND ROLL IS APPROX 53% OF TOTAL LANDING
DISTANCE OVER A 50 FT OBSTACLE.

EXAMPLE:

OAT 75 °F
PRESSURE ALTITUDE 4,000 FT
LANDING WEIGHT 3,200 LB
HEADWIND 10 KNOTS

TOTAL LANDING DISTANCE
OVER A 50 FT OBSTACLE 1,475 FT
GROUND ROLL (53% OF 1,475) 782 FT
IAS TAKEOFF SPEED 87 MPH IAS

WEIGHT (LB)	IAS APPROACH SPEED (ASSUMES ZERO INSTR ERROR)	
	MPH	KNOTS
3,400	90	78
3,200	87	76
3,000	84	73
2,800	81	70
2,600	78	68
2,400	75	65

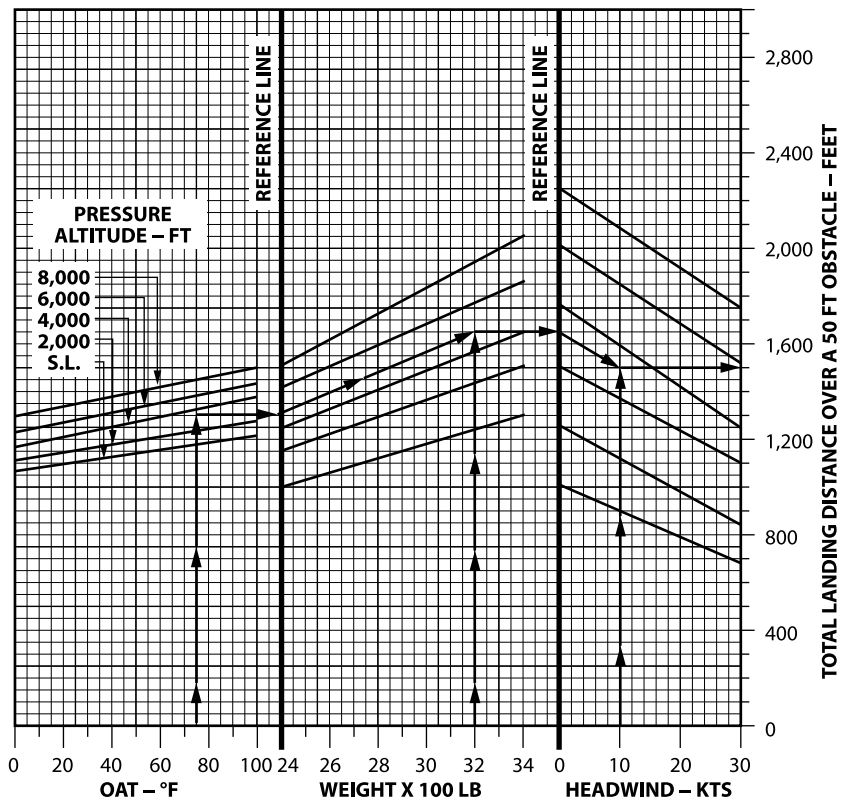


Figure 35. - Normal Landing Chart.

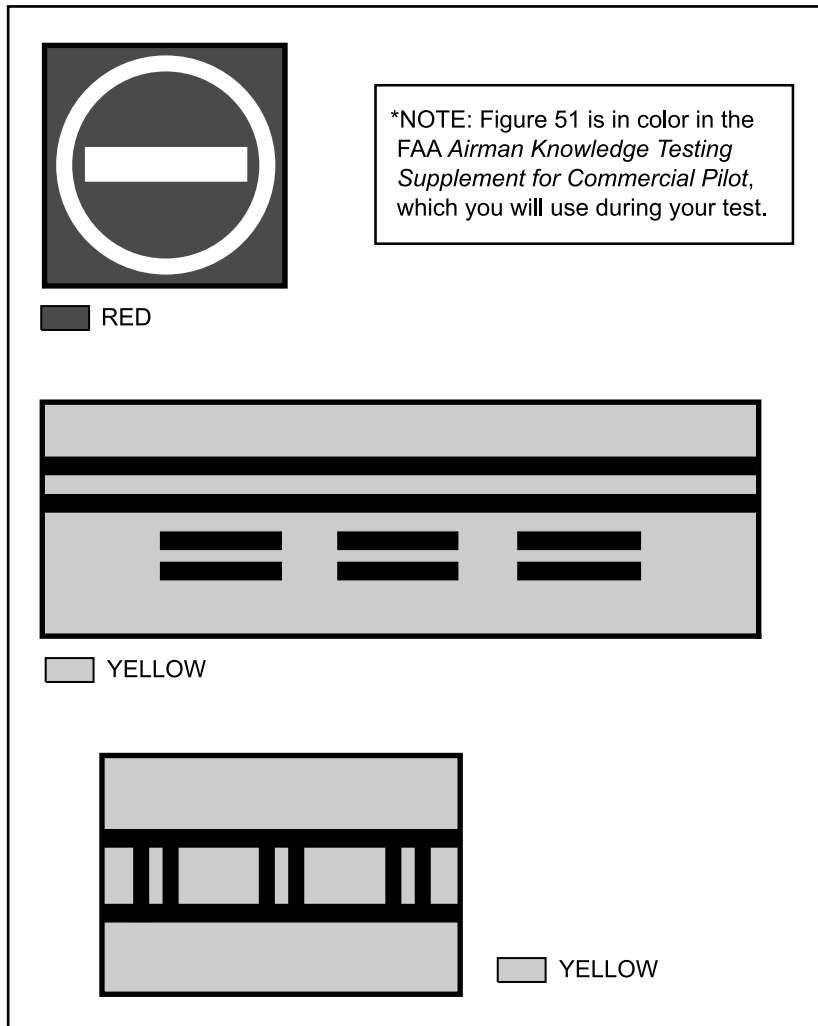


Figure 51. – Airport Signs.



Figure 64. – Airport Sign.

APPENDIX B

KNOWLEDGE TEST FOR MULTI-ENGINE LAND ADD-ON RATING

<i>End-of-Course Knowledge Test - Multi-Engine</i> 152
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For a copy of the answer key to the *Commercial Pilot Syllabus* End-of-Course Knowledge Test, please email a request for the CPSYL End-of-Course Answer Key to the Gleim Aviation Department at aviationteam@gleim.com.

END-OF-COURSE KNOWLEDGE TEST - MULTI-ENGINE

1. Which of the following documents is specific to one particular airplane and its equipment, and is required to be kept current if any changes are made?
 - A — FAA-Approved Airplane Flight Manual.
 - B — Information Manual.
 - C — Airplane Owner's Manual.

2. A Minimum Equipment List (MEL) is a list of equipment that
 - A — Must be operative for every flight.
 - B — May be inoperative for some or all flights.
 - C — Is required for day VFR operations.

3. Reducing an airplane's available power by one-half reduces climb performance by
 - A — One-half.
 - B — Less than one-half.
 - C — More than one-half.

4. Asymmetric thrust is created when one engine fails on a conventional twin because the remaining engine's thrust is not distributed evenly along the
 - A — Longitudinal axis.
 - B — Lateral axis.
 - C — Vertical axis.

5. V_{MC} is defined as the minimum airspeed at which directional control can be maintained with
 - A — Either engine inoperative and windmilling, and the other engine developing maximum power.
 - B — The critical engine inoperative and windmilling, and the operative engine developing maximum power.
 - C — The critical engine inoperative and feathered, and the operative engine developing maximum power.

6. During normal operations, each engine of a typical multi-engine airplane receives fuel from
 - A — A tank located on the opposite side of the airplane.
 - B — A tank located on the same side of the airplane.
 - C — A single main tank located in the fuselage.

7. Which of the following are the primary flight controls?
 - A — Rudder, elevator, and ailerons.
 - B — Flaps, trim tabs, and spoilers.
 - C — Throttles, propeller controls, and mixtures.

8. Anti- and de-icing equipment is intended primarily as a means of
 - A — Enabling any area of icing to be safely penetrated.
 - B — Removing ice build-up prior to takeoff.
 - C — Providing the means to escape from icing conditions.

9. While airborne in the vicinity of an airport with an operating control tower, a flashing red light means
 - A — Return for landing.
 - B — Airport unsafe; do not land.
 - C — Give way to other aircraft and continue circling.

10. If you are intercepted by a military or law enforcement aircraft while in distress, and you are unable to establish radio contact with the intercepting aircraft, you are expected to
 - A — Rock your airplane's wings.
 - B — Turn away from the intercepting aircraft.
 - C — Flash all of your aircraft's lights at irregular intervals.

11. Risk management is the part of the decision-making process that relies on which features to reduce the risks that are associated with each flight?
 - A — Past experience and quick decisions.
 - B — The mental process of analyzing all information in a particular situation and making a timely decision on what action to take.
 - C — Situational awareness, problem recognition, and good judgment.

12. All airplane performance charts feature which item as a variable?
 - A — Runway gradient.
 - B — Barometric pressure.
 - C — Weight.

13. A multi-engine airplane's accelerate-stop distance is defined as the distance required for the airplane to accelerate to the liftoff speed (V_{LOF}) and, assuming the failure of one engine
 - A — At V_{LOF} , brake to a complete stop.
 - B — At V_{LOF} , continue the takeoff over a 50-ft. obstacle.
 - C — At V_{YSE} , brake to a complete stop.

14. The single-engine service ceiling is the maximum pressure altitude at which a multi-engine airplane is able to
 - A — Maintain a 100 FPM rate of climb with one engine inoperative.
 - B — Maintain altitude with one engine inoperative.
 - C — Maintain a 50 FPM rate of climb with one engine inoperative.

15. How can vapor lock be eliminated?
 - A — By using the electric fuel pump or primer to force vapor pockets out of the lines.
 - B — By cranking the engine with the mixture set to cut-off and the throttle fully open.
 - C — By using full carburetor heat at the first indication of engine roughness or loss of manifold pressure.

16. During the propeller feathering check, the propeller control should be placed in the feather detent just long enough for the

- A — Engine to feather completely.
- B — RPM to increase by 200-300 RPM.
- C — RPM to decrease by 200-300 RPM.

17. The Practical Test Standards require that stalls be performed in a multi-engine airplane at an altitude that will allow the maneuver to be completed no lower than

- A — 700 ft. AGL
- B — 1,500 ft. AGL
- C — 3,000 ft. AGL

18. When landing with a failed engine, it is better to decrease airspeed with

- A — The addition of flaps.
- B — A decrease in engine power.
- C — Elevator trim inputs.

19. If an engine fails during the takeoff roll when the airspeed is below V_{MC} , the only correct action is to

- A — Troubleshoot the failed engine while continuing the takeoff.
- B — Declare an emergency while requesting priority from ATC.
- C — Immediately close both throttles, maintain directional control, and apply braking as necessary.

20. Your first priority following the failure of one engine while airborne is to maintain

- A — Altitude and heading
- B — Altitude and airspeed.
- C — Heading and airspeed.

21. Which airspeed should be maintained during an engine-inoperative approach?

- A — V_{YSE}
- B — $V_{MC} + 5$ kt.
- C — $V_{LO} + 5$ kt.

22. When maneuvering with one engine inoperative, it is preferable to turn into the

- A — Inoperative engine.
- B — Operating engine.
- C — Wind.

23. The density of the air DECREASES as

- A — Temperature increases.
- B — Humidity decreases.
- C — Barometric pressure increases.

24. Which of the following is a type of retractable landing gear system?

- A — Electro-hydraulic.
- B — Turbo-compound.
- C — Suction/pneumatic.

25. The pitot-static system provides the source for the operation of the

- A — Altimeter, attitude indicator, and vertical speed indicator.
- B — Altimeter, airspeed indicator, and turn coordinator.
- C — Altimeter, vertical speed indicator, and airspeed indicator.

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APPENDIX C

FAST-TRACK COMMERCIAL PILOT TRAINING SYLLABUS

<i>Training Course Objectives</i>	155
<i>Flight Training Syllabus</i>	157

TRAINING COURSE OBJECTIVES

NOTE: This is an abbreviated, fast-track training program. For a complete commercial pilot training curriculum, please consult Part I of the Gleim *Commercial Pilot Syllabus*.

All ground training lessons in Part I must be completed along with the flight training lessons in this appendix to complete the fast-track training program.

This appendix contains 18 flight training lessons for the commercial pilot certificate, airplane single-engine land rating, under 14 CFR 61.129.

The Gleim system focuses on helping you develop “ACS proficiency,” with respect to the 44 ACS tasks required by the FAA on your practical test, as quickly and easily as possible.

In developing this syllabus, we had to make some assumptions. You and your CFI are encouraged to make adjustments to the syllabus to meet your requirements. We made the following assumptions:

1. You have an instrument rating; thus, you do not need 10 additional hours of instrument flight training.
2. You have at least 5 hr. of solo night VFR and at least 10 takeoffs and landings at an airport with an operating control tower during your commercial flight training.
3. You do NOT have a complex airplane logbook endorsement.
 - a. If you have a complex airplane logbook endorsement, one or more of the first four flight lessons will not be needed.
 - b. Note that 10 hr. of flight training (dual) is required in a complex airplane.
4. You have NOT met the commercial flight training requirement that one day and one night dual cross-country flight be performed.
 - a. If you have met the flight training requirements for the day and night cross-country flights, flight lessons 5 and 6 may not be needed.
5. Flight lessons 1 through 4 are designed to provide you with the minimum training for a complex airplane logbook endorsement to act as PIC.
 - a. If you are instrument rated, we recommend that you seek the service of a CFII and obtain instrument flight transition training in that complex airplane.
6. Flight lessons 5 and 6 are provided to meet the commercial aeronautical experience requirements for cross-country flight training and to accumulate the 10 hr. of complex airplane training.
 - a. Cross-country flight training in a complex airplane is essential in your transition training program.
7. You must decide whether you will use a complex airplane for your entire practical test or use two airplanes: a complex airplane for tasks requiring such an airplane and a primary trainer airplane for the remaining tasks.
 - a. Seek the advice of your CFI for the pros and cons of each choice.

NOTE: This fast-track syllabus is designed for pilots with over 200 hours and an instrument rating (see above). The syllabus in Part I is for pilots who have just completed their instrument training.

8. This fast-track training program contains the following flight lessons:

Flight Training

<u>Lesson</u>	<u>Topic</u>
1	Introduction to Complex Airplanes
2	Slow Flight and Stalls
3	Emergency Operations
4	Complex Airplane Review
5	Dual Cross-Country
6	Dual Night Cross-Country
7	Solo Cross-Country
8	Chandelles, Lazy Eights, Steep Turns
9	Eights-on-Pylons and Steep Spirals
10	Solo Practice
11	Review of Slow Flight and Stalls
12	Review of Emergency Operations
13	Solo Practice
14	Maneuvers Review
15	Solo Practice
16	Maneuvers Review
17	Solo Practice
18	Practice Practical Test

NOTE: Ground training lessons are covered in Part I of this *Commercial Pilot Syllabus*.

FLIGHT TRAINING SYLLABUS

The following is a brief description of the parts of each flight lesson in this syllabus:

Objective: We open each lesson with an objective, usually a sentence or two, to help you gain perspective and understand the goal for that particular lesson.

Text References: For lessons with new learning items, this section tells you which reference books you will need to study or refer to while mastering the tasks within the lesson. Abbreviations are given to facilitate the cross-referencing process.

Content: Each lesson contains a list of the tasks required to be completed before moving to the next lesson. A task may be listed as a “review item” (a task that was covered in a previous lesson) or as a “new item” (a task which is introduced to you for the first time). Items that include “(IR)” should be accomplished by reference to instruments only. Each task is preceded by three blank “checkoff” boxes, which may be used by your CFI to keep track of your progress and to indicate that each task was completed.

There are three boxes because it may take more than one flight to complete the lesson. Your CFI may mark the box(es) next to each task in one of the following methods (or any other method desired):

✓ - task completed to lesson completion standards	D - demonstrated by instructor A - accomplished by you S - safe/satisfactory C - meets or exceeds ACS standards	1 - above lesson standard 2 - meets lesson standard 3 - below lesson standard
---	--	---

The last task in each flight lesson is labeled “Additional items at CFI’s discretion,” and is followed by several blank lines. This area can be used to record any extra items that your CFI feels are appropriate to the lesson, taking into account such variables as weather, local operational considerations, and your progress as a student.

NOTE: CFIs are reminded not to limit themselves to the blank lines provided—use as much of the page as you need.

Completion Standards: Based on these standards, your CFI determines how well you have met the objective of the lesson in terms of knowledge and skill.

Instructor’s Comments and Lesson Assignment: Space is provided for your CFI’s critique of the lesson, which you can refer to later. Your instructor may also write any specific assignment for the next lesson.

Reading Assignments for Flight Lessons

You are expected to be prepared for each flight lesson. Our reading assignments include text references for new tasks to help you understand what is going to happen and how and why you need to do everything **before** you go to the airport.

Next to each new item in the **Content** section, we provide study unit-level references to read in *Commercial Pilot Flight Maneuvers and Practical Test Prep* (FM) and/or *Pilot Handbook* (PH) and the section to read, if appropriate, in your airplane’s Pilot’s Operating Handbook (POH). You can make use of the comprehensive index in the Gleim books if you need to analyze specific task element-level details.

Study Tips

- As you read the material, attempt to understand the basic concepts.
- Try to anticipate and visualize the concepts and flight maneuvers.
- With this basic knowledge, your CFI can expand on the specific and finer points, especially when explaining how a task is done in your specific airplane.
- After your flight lesson, task items are fresh in your mind; they will make sense, and you should be able to understand and learn more.
- Study review items so you can explain them to your CFI and your examiner.
- After you study, relax and plan a time to begin preparing for the next flight lesson.

FLIGHT LESSON 1: INTRODUCTION TO COMPLEX AIRPLANES

Objective

To familiarize the pilot with the complex airplane, its operating characteristics, the cockpit controls, and the instruments and systems. The pilot will be introduced to preflight and postflight procedures, the use of checklists, and the safety precautions to be followed.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Pilot's Operating Handbook (POH)

Content

1. Preflight briefing
2. New items

- Certificates and documents - FM 3
- Airworthiness requirements - FM 4
- Minimum equipment list (MEL) - FM 4; CFI
- Performance and limitations - FM 8; POH 2, 5, 6
- Operation of systems - FM 9; POH 1, 7, 8, 9
- Supplemental oxygen - FM 40; POH 7, 8
- Pressurization - FM 41; POH 7
- Use of checklists - FM 12, 121; POH 4
- Preflight inspection - FM 11; POH 4
- Flight deck management - FM 12
- Engine starting - FM 13; POH 4
- Taxiing - FM 14
- Runway incursion avoidance - FM 14
- Before-takeoff check - FM 15; POH 4
- Normal and crosswind takeoff and climb - FM 18; POH 4
- Normal and crosswind approach and landing - FM 19; POH 4
- Traffic patterns - FM 17
- Wake turbulence avoidance - FM 17
- Wind shear avoidance - FM 17
- After landing, parking, and securing - FM 46; POH 4
- Additional items at CFI's discretion _____

3. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot displays an understanding of the airplane's systems, preflight procedures, and postflight procedures. The pilot will be able to demonstrate at least a private pilot skill level during the flight operations. Additionally, the pilot will display an understanding of supplemental oxygen requirements and pressurization systems and controls even if these items are not applicable to the complex airplane being flown.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 2: SLOW FLIGHT AND STALLS

Objective

To improve the pilot's proficiency in the operation of a complex airplane and to introduce slow flight, stalls, short-field takeoffs and landings, and power-off 180° accuracy approaches and landings.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)

Pilot Handbook (PH)

Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 1 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____

2. Preflight briefing

3. Review items

- Operation of systems
- Supplemental oxygen
- Pressurization
- Use of checklists
- Preflight inspection
- Flight deck management
- Engine starting
- Taxiing
- Runway incursion avoidance
- Before-takeoff check
- After landing, parking, and securing

4. New items

- Short-field takeoff and maximum performance climb - FM 22; POH 4
- Short-field approach and landing - FM 23; POH 4
- Power-off 180° accuracy approach and landing - FM 24
- Maneuvering during slow flight - FM 35
- Power-off stalls - FM 36; PH 1
- Power-on stalls - FM 37; PH 1
- Accelerated stalls - FM 38; PH 1
- Spin awareness - FM 39; POH 2
- Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot displays an increased proficiency in the operation of a complex airplane. During this and subsequent flights, the pilot will perform the preflight inspection, engine starting, taxiing, the before-takeoff check, and the postflight procedures without instructor assistance. The pilot will be able to demonstrate an understanding of the short-field takeoffs and landings, power-off accuracy approaches and landings, slow flight, and stalls (including the proper recovery procedures).

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 3: EMERGENCY OPERATIONS

Objective

To improve the pilot's proficiency in the operation of a complex airplane and to introduce emergency operations and soft-field takeoffs and landings.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 2 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items
 - Operation of systems
 - Short-field takeoff and maximum performance climb
 - Short-field approach and landing
 - Power-off 180° accuracy approach and landing
 - Maneuvering during slow flight
 - Power-off stalls
 - Power-on stalls
 - Accelerated stalls
 - Spin awareness

4. New items
 - Soft-field takeoff and climb - FM 20; POH 4
 - Soft-field approach and landing - FM 21; POH 4
 - Go-around/rejected landing - FM 25; POH 4
 - Emergency descent - FM 42; POH 3
 - Emergency approach and landing (simulated) - FM 43; POH 3
 - Systems and equipment malfunctions - FM 44; POH 3, 9
 - Emergency equipment and survival gear - FM 45; POH 7, 9
 - Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot displays proficiency in short-field takeoffs and landings, power-off accuracy approaches and landings, slow flight, and recovery from stalls. Additionally, the pilot will display an understanding of emergency procedures, go-arounds, and soft-field takeoffs and landings.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 4: COMPLEX AIRPLANE REVIEW

Objective

To review procedures and maneuvers covered previously in a complex airplane.

Content

1. Flight Lesson 3 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____

2. Preflight briefing

3. Review items

- Certificates and documents
- Airworthiness requirements
 - Minimum equipment list (MEL)
- Performance and limitations
 - Operations at maximum takeoff weight
 - High density altitude operations
- Operation of systems
- Supplemental oxygen
- Pressurization
- Aeromedical factors
- Aeronautical decision making (ADM)
- Traffic patterns
- Soft-field takeoff and climb
- Soft-field approach and landing
- Short-field takeoff and maximum performance climb
- Short-field approach and landing
- Power-off 180° accuracy approach and landing
- Go-around/rejected landing
- Emergency descent
- Emergency approach and landing (simulated)
- Systems and equipment malfunctions
- Maneuvering during slow flight
- Power-off stalls
- Power-on stalls
- Accelerated stalls
- Spin awareness
- Additional items at CFI's discretion _____

4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an increase in proficiency in each maneuver while operating a complex airplane. While maneuvering during slow flight, the pilot will be able to maintain the desired airspeed, +5/-0 kt.; specified altitude, ± 100 ft.; heading, $\pm 10^\circ$; specified bank angle, $\pm 10^\circ$, during turning flight; and roll out on the specified heading, $\pm 10^\circ$.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 5: DUAL CROSS-COUNTRY

Objective

To introduce the pilot to planning and executing a daytime cross-country flight to the commercial pilot skill level. This flight must be at least 2 hours in duration, a total straight-line distance of more than 100 NM from the original point of departure, and occur in daytime conditions.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)
Pilot Handbook (PH)

Content

1. Flight Lesson 4 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____

2. Preflight briefing

3. Review items

- | | |
|---|---|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Certificates and documents | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field takeoff and maximum performance climb |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Performance and limitations | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field approach and landing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Aeromedical factors | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Systems and equipment malfunctions |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Aeronautical decision making (ADM) | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Straight-and-level (IR)* |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Flight deck management | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Constant airspeed climbs and descents (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Radio communications and ATC light signals | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Turns to a heading (IR)* |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Airport, runway, and taxiway signs, markings, and lighting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Recovery from unusual attitudes (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Runway incursion avoidance | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Partial panel flying (IR)* |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Intercepting and tracking navigational systems (IR)* |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field approach and landing | |

* IR means instrument reference only

4. New items

- Weather information - FM 5
- Cross-country flight planning - FM 6
- National Airspace System - FM 7
- Open a flight plan - CFI
- Pilotage and dead reckoning - FM 31
- Magnetic compass turns - PH 2
- Navigation systems - FM 32; PH 10
- ATC radar services - PH 3
- Diversion - FM 33
- Lost procedures - FM 34
- Closing a flight plan - CFI
- Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

NOTE: This lesson may be completed under VFR or IFR at the discretion of the flight instructor and/or chief flight instructor, as appropriate.

Completion Standards

The lesson will have been successfully completed when the pilot is able to plan and conduct a daytime cross-country flight. The pilot will be able to maintain altitude, ± 100 ft.; heading, $\pm 10^\circ$; and the desired airspeed, ± 10 kt. Additionally, the pilot will be able to verify the airplane's position within 2 NM of the flight planned route at all times.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 6: DUAL NIGHT CROSS-COUNTRY

Objective

To introduce the pilot to planning and executing a nighttime cross-country flight to the commercial pilot skill level. This flight must be at least 2 hours in duration, a total straight-line distance of more than 100 NM from the original point of departure, and occur in nighttime conditions.

Text References

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)

Pilot Handbook (PH)

Pilot's Operating Handbook (POH)

Content

1. Flight Lesson 5 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____

2. Preflight briefing

3. Review items

- | | |
|---|--|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Physiological aspects of night flying | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field approach and landing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Lighting and equipment for night flight | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Go-around/rejected landing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Performance and limitations | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Collision and runway incursion avoidance procedures |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Airport, runway, and taxiway signs, markings, and lighting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Straight-and-level (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Runway incursion avoidance | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Constant airspeed climbs and descents (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Preflight inspection | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Turns to a heading (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Recovery from unusual attitudes (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Partial panel flying (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Intercepting and tracking navigational systems (IR) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> After landing, parking, and securing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field takeoff and maximum performance climb | |

4. New items (night operations)

- Weather information - FM 5
- Cross-country flight planning - FM 6
- Pilotage and dead reckoning - FM 31
- Navigation systems and radar services - FM 32; PH 10
- Magnetic compass turns - PH 2
- Diversion - FM 33
- Lost procedures - FM 34
- Emergency equipment and survival gear - FM 45; POH 7, 9
- Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

NOTE: This lesson may be completed under VFR or IFR at the discretion of the flight instructor and/or chief flight instructor, as appropriate.

Completion Standards

This lesson will have been successfully completed when the pilot is able to plan and conduct a nighttime cross-country flight. The pilot will be able to maintain altitude, ± 100 ft.; heading, $\pm 10^\circ$; and the desired airspeed, ± 10 kt. Additionally, the pilot will be able to verify the airplane's position within 2 NM of the flight planned route at all times.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 8: CHANDELLES, LAZY EIGHTS, STEEP TURNS

Objective

To review procedures and maneuvers covered previously. Additionally, the pilot will be introduced to performance maneuvers in a complex airplane.

Text Reference

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)

Content

1. Flight Lesson 7 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items
 - Operation of systems
 - Aeronautical decision making (ADM)
 - Soft-field takeoff and climb
 - Soft-field approach and landing
 - Traffic patterns
 - Go-around/rejected landing
4. New items
 - Steep turns - FM 26
 - Chandelles - FM 28
 - Lazy eights - FM 29
 - Additional items at CFI's discretion _____
5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an understanding of performing steep turns, chandelles, and lazy eights in the complex airplane. The pilot will be able to maintain V_Y , ± 5 kt. during the takeoff climb and maintain the recommended approach airspeed (with gust factors applied), ± 5 kt.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 9: EIGHTS-ON-PYLONS AND STEEP SPIRALS

Objective

To review procedures and maneuvers covered previously. Additionally, the pilot will be introduced to eights-on-pylons, steep spirals, and basic attitude instrument flight in a complex airplane.

Text Reference

Commercial Pilot Flight Maneuvers and Practical Test Prep (FM)

Content

1. Flight Lesson 8 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items
 - Operation of systems
 - Supplemental oxygen
 - Pressurization
 - Aeromedical factors
 - Short-field takeoff and maximum performance climb
 - Short-field approach and landing
 - Power-off 180° accuracy approach and landing
 - Go-around/rejected landing
 - Chandelles
 - Lazy eights
 - Systems and equipment malfunctions

4. New items
 - Eights-on-pylons - FM 30
 - Steep spirals - FM 27
 - Straight-and-level (IR) - CFI
 - Turns to a heading (IR) - CFI
 - Recovery from unusual flight attitudes (IR) - CFI
 - Constant airspeed climbs and descents (IR) - CFI
 - Additional items at CFI's discretion _____

5. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an understanding of performing eights-on-pylons and steep spirals in the complex airplane. Additionally, the pilot's proficiency in chandelles and lazy eights will increase. The pilot will be able to maintain V_x , +10/-0 kt., until clearing the obstacles during the short-field takeoff, then maintain V_y , ±5 kt. During the short-field and power-off accuracy approaches and landings, the pilot will be able to maintain the recommended approach airspeed (with gust factors applied), ±5 kt., and touch down at or within 200 ft. beyond a specific point.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 12: REVIEW OF EMERGENCY OPERATIONS

Objective

To review procedures and maneuvers covered previously.

Content

1. Flight Lesson 11 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____

2. Preflight briefing

3. Review items

Short-field takeoff and maximum performance climb

Short-field approach and landing

Power-off 180° accuracy approach and landing

Go-around/rejected landing

Chandelles

Lazy eights

Eights-on-pylons

Emergency descent

Emergency approach and landing (simulated)

Additional items at CFI's discretion _____

4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an understanding of the elements of each maneuver, including the correct entry, performance, and recovery techniques. The pilot will be able to perform the short-field takeoffs and landings and the power-off accuracy approach and landing to the minimum standards listed in the current FAA Commercial Pilot Airman Certification Standards.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 14: MANEUVERS REVIEW

Objective

To review procedures and maneuvers covered previously and to identify areas where additional practice is necessary.

Content

1. Flight Lesson 13 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Performance and limitations <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Operation of systems <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Preflight inspection <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Flight deck management <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Engine starting <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Taxiing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Runway incursion avoidance <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Before-takeoff check <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Traffic patterns <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind takeoff and climb <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Normal and crosswind approach and landing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field takeoff and climb <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Soft-field approach and landing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field takeoff and maximum performance climb <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Short-field approach and landing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Power-off 180° accuracy approach and landing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Go-around/rejected landing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Steep turns <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Steep spirals	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Chandelles <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Lazy eights <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Eights-on-pylons <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Maneuvering during slow flight <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Power-off stalls <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Power-on stalls <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Accelerated stalls <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Spin awareness <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Emergency descent <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Emergency approach and landing (simulated) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Systems and equipment malfunctions <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Attitude instrument flying (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Partial panel flying (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Intercepting and tracking navigation systems (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Recovery from unusual flight attitudes (IR) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> After landing, parking, and securing <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Additional items at CFI's discretion _____ _____ _____
---	--
4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates an increased knowledge of the complex airplane systems and flight characteristics. Additionally, the pilot will demonstrate a good understanding of the correct procedures in all of the listed tasks. The pilot will be able to maintain the desired altitude, ± 100 ft.; airspeed, ± 10 kt.; and heading, $\pm 10^\circ$. During takeoffs and landings, the pilot will be able to maintain V_Y , ± 5 kt.; V_X , $+5/-0$ kt.; and the recommended approach airspeed (with gust factors applied), ± 5 kt.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 16: MANEUVERS REVIEW

Objective

To review procedures and maneuvers covered previously.

Content

1. Flight Lesson 15 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____
2. Preflight briefing
3. Review items
 - Operation of systems
 - Supplemental oxygen
 - Pressurization
 - Runway incursion avoidance
 - Soft-field takeoff and climb
 - Soft-field approach and landing
 - Short-field takeoff and maximum performance climb
 - Short-field approach and landing
 - Power-off 180° accuracy approach and landing
 - Traffic patterns
 - Go-around/rejected landing
 - Steep turns
 - Steep spirals
 - Chandelles
 - Lazy eights
 - Eights-on-pylons
 - Emergency descent
 - Emergency approach and landing (simulated)
 - Systems and equipment malfunctions
 - Emergency equipment and survival gear
 - Additional items at CFI's discretion _____
4. Postflight critique and preview of next lesson

Completion Standards

The lesson will have been successfully completed when the pilot demonstrates proficiency at the commercial pilot skill level in all the assigned procedures and maneuvers. The pilot will complete each task to the standards specified in the current FAA Commercial Pilot Airman Certification Standards.

Instructor's comments: _____

Lesson assignment: _____

Notes: _____

FLIGHT LESSON 18: PRACTICE PRACTICAL TEST

Objective

The pilot will be able to demonstrate the required proficiency of a commercial pilot by utilizing the current FAA Commercial Pilot Airman Certification Standards. Note: If a noncomplex and a complex airplane are used, a complex airplane must be used for all takeoffs, landings, and emergency procedures.

Content

1. Flight Lesson 17 complete? Yes ____ Copy of lesson placed in pilot's folder? Yes ____

2. Preflight briefing

3. Stage check tasks

- | | | | |
|--|--|--|--|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Certificates and documents | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Go-around/rejected landing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Airworthiness requirements | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Steep turns |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Weather information | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Steep spirals |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Cross-country flight planning | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Chandelles |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | National Airspace System | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Lazy eights |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Performance and limitations | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Eights-on-pylons |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Operation of systems | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Pilotage and dead reckoning |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Aeromedical factors | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Navigation systems and radar services |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Physiological aspects of night flying | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Diversion |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Lighting and equipment for night flying | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Lost procedures |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Preflight inspection | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Magnetic compass turns |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Flight deck management | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Maneuvering during slow flight |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Engine starting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Power-off stalls |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Taxiing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Power-on stalls |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Runway incursion avoidance | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Accelerated stalls |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Before-takeoff check | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Spin awareness |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Radio communications and ATC light signals | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Emergency descent |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Traffic patterns | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Emergency approach and landing (simulated) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Airport, runway, and taxiway signs, markings, and lighting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Systems and equipment malfunctions |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Normal and crosswind takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Emergency equipment and survival gear |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Normal and crosswind approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Supplemental oxygen |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Soft-field takeoff and climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Pressurization |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Soft-field approach and landing | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | After landing, parking, and securing |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Short-field takeoff and maximum performance climb | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Additional items at CFI's discretion _____ |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Short-field approach and landing | | _____ |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Power-off 180° accuracy approach and landing | | _____ |

4. Flight Lesson 18 complete? Yes ____ Copy of graduation certificate placed in pilot's folder? Yes ____

5. Postflight critique

Completion Standards

This lesson and the course of training will have been successfully completed when the pilot demonstrates the required level of proficiency in all tasks of the current FAA Commercial Pilot Airman Certification Standards. If additional instruction is necessary, the chief flight instructor will assign the additional training. If the flight is satisfactory, the chief flight instructor will complete the pilot's training records and issue a graduation certificate.

Instructor's comments: _____

Notes: _____

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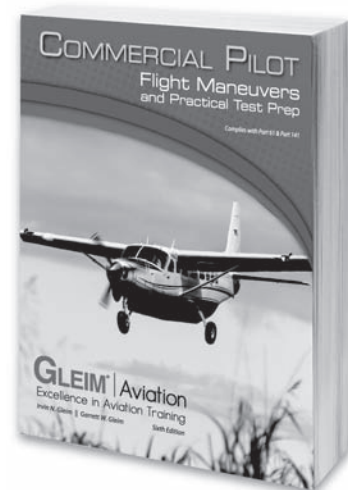
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Dr. Irvin N. Gleim
Gleim Publications, Inc.
P.O. Box 12848
University Station
Gainesville, FL 32604

Dear Dr. Gleim:

We have reviewed the Gleim Commercial Pilot syllabus (less the referenced Gleim support materials) developed by Gleim Publications, Inc.

This commercial pilot syllabus appears to be acceptable in meeting the minimum curriculum requirements of 14 CFR part 141 in scope and content provided that it is submitted to a Federal Aviation Administration (FAA) Flight Standards District Office for approval under 14 CFR section 141.55.

We believe this syllabus, when appropriately incorporated into a training course outline in accordance with 14 CFR section 141.55, and approved by FAA, or when it has been appropriately modified for use under 14 CFR part 61, should serve as an acceptable commercial pilot syllabus for airplanes.

We trust that the information provided will be helpful to you in gaining approval of this syllabus by the FAA.

Sincerely,

Michael L. Henry
Manager, General Aviation
and Commercial Division

AUTHORS' NOTE:

This syllabus must be individually approved by the local Flight Standards District Office (FSDO) before it is implemented in a Part 141 course of training. There is no approval requirement for Part 61 training.

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