

CENTRAL TEXAS COLLEGE
AIR AGENCY No. DU8S099Q
SYLLABUS FOR AIRP 1417
PRIVATE PILOT GROUND SCHOOL
Semester Hours Credit: 4

Instructor: _____
Office Hours: _____

I. INTRODUCTION

- A. The training course outline meets all the curriculum requirements for the Private Pilot Certification Course contained in Part 141.
- B. The training syllabus herein contains a separate ground training course. See Appendix B, Private Pilot Certification Course - Airplane Single Engine Land Ground Training, 40 hours

II. OVERALL OR GENERAL OBJECTIVES OF THE COURSE

The purpose of this course is to study the necessary aeronautical knowledge and meet the prerequisites specified in Part 61 of the Federal Aviation Regulations for a Private Pilot Knowledge Test

III TRAINING COURSE COMPLETION STANDARDS

The student must meet the prerequisites specified in Part 61 of the Federal Aviation Regulations to take the Private Pilot Airplane Knowledge Test and must demonstrate through written exams the necessary knowledge to pass the test.

IV. INSTRUCTIONAL FACILITIES

This course is conducted at facilities of Central Texas College. See Appendix II for the description of the facilities which will be used.

V. INSTRUCTIONAL MATERIALS

The instructional materials identified for this course are viewable through http://www.ctcd.edu/im/im_main.asp.

VI. COURSE REQUIREMENTS

The very nature of the aviation environment demands that a pilot consistently strives toward mastery of all available knowledge relating to that environment. High personal standards of study and goal orientation are required for the student to meet the goals of safety, pilot proficiency and knowledge.

February 2007

An overall average of 70% must be maintained in order to meet the minimum requirements specified in the Federal Aviation Regulations Part 141.

VII. EXAMINATIONS

A written exam will be given at the end each stage as identified in Appendix A of this syllabus. A student must maintain an overall average of 70%. If a passing grade is not achieved, additional study and out of class work may be required by the instructor.

A student must be present for all examinations. No make-up examinations will be given. Students who know in advance that they will be absent from an examination due to valid reasons, must arrange to take an early examination. Unexpected absences due to illness or extenuating circumstances will require the student to see the instructor about individual make-up work in lieu of the missed examination.

Students without excused absences will be given a zero for the examination missed.

VIII. SEMESTER GRADE COMPUTATIONS

Exams and Point Values	Points to Grade Ratio
A. Stage 1 Exam 100 points	360 - 400 A
B. Stage 2 Exam 100 points	320 - 359 B
C. Stage 3 Exam 100 points	280 - 319 C
D. Stage 4 <u>Exam 100 points</u>	240 - 279 D
400 points	0 - 239 F

APPENDIX A
PRIVATE PILOT CERTIFICATION COURSE
AIRPLANE SINGLE ENGINE LAND
GROUND TRAINING 40.5 HOURS

STAGE ONE - FAR AND OTHER PUBLICATIONS - 10 HOURS

- I. STAGE ONE OBJECTIVES: To develop the student's knowledge of the Federal Aviation Regulations, NTSB Part 830, Aeronautical Information Manual (AIM) and Advisory Circular System as appropriate for a Private Pilot Airplane Pilot Certificate.
- II. STAGE ONE COMPLETION STANDARDS: This stage will be successfully completed when the student passes the Stage One written exam with a grade of 70%.

LESSON ONE

- A. OBJECTIVE: To familiarize the student to FAR Parts 1 and 61 as applies to the Private Pilot Certificate with an Airplane rating.

CONTENT:

- 1. FAR Part 1 - Definitions and abbreviations important to a Private Pilot
- 2. FAR Part 61
 - a. Requirements for certificates and ratings
 - b. Duration of pilot certificates
 - c. Medical certificates - classes and duration of each
 - d. General limitations
 - e. Written tests and associated regulations
 - f. Flight tests and associated regulations
 - g. Pilot logbooks and logging of flight time
- B. COMPLETION STANDARDS: This session will be complete when the material has been covered and the student demonstrates through oral discussion a working knowledge of the appropriate portions of FAR Parts 1 and 61.

LESSON TWO

- A. OBJECTIVE: This lesson will be used to familiarize the student in the pertinent regulatory portions of FAR Part 61 and the various controlled airspace designations as outlined in FAR part 71.

CONTENT:

- 1. FAR Part 61
 - a. Recency of experience requirements

- b. Subpart C, Student Pilots
- c. Subpart D, Private Pilots
- 2. FAR Part 71
 - a. Subpart A
 - b. Relate controlled airspace as shown on the San Antonio Sectional Chart

B. **COMPLETION STANDARDS:** This lesson will be complete when the student demonstrates, through oral discussion, a working knowledge of the appropriate portions of FAR 61 and 71

LESSON THREE

A. **OBJECTIVE:** During this lesson the student will be familiarized with the pertinent regulatory requirements of FAR Part 91 as related to Private Pilot operations.

CONTENT:

- 1. General operating and flight rules
- 2. Airplane Registration and airworthiness certificates
- 3. VFR requirements

B. **COMPLETION STANDARDS:** This lesson will be complete when the student demonstrates, through oral quizzing, a working knowledge of the appropriate portions of FAR Part 91.

LESSON FOUR

A. **OBJECTIVE:** During this lesson, the student will be familiarized with the pertinent parts of FAR 91 as applies to maintenance and alterations as well as with the accident reporting rules of NTSB Part 830.

CONTENT:

- 1. FAR Part 91
 - a. Maintenance, preventive maintenance and alterations
 - b. Familiarization with Subpart D
- 2. National Transportation Safety Board Procedural Regulations Part 830

B. **COMPLETION STANDARDS:** This lesson will be complete when the student demonstrates, through oral discussion an understanding of the appropriate parts of FAR Part 91 and NTSB 830 as they apply to Private Pilot operations.

LESSON FIVE

A. **OBJECTIVE:** During this lesson the student will be familiarized with the Aeronautical AIRP 1417

Information Manual (AIM) and the Airport Facility Directory, and Advisory Circular System.

CONTENT:

1. Aeronautical Information Manual (AIM) as applies to Private Pilots
 2. Airport Facility Directory
 - a. Airport Directory (legend)
 - b. Airport facility information
 3. FAA Advisory Circular System (familiarization)
- B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates through oral discussion a working knowledge of the (AIM), Airport Facility Directory and the FAA Advisory Circulars as these publications relate to Private Pilot Certification and operations.

LESSON SIX - STAGE ONE WRITTEN EXAMINATION

The time for this lesson has not been included in the 10 hours for Stage One or the 40.5 hours for the Ground Training Course.

STAGE TWO - FLIGHT FUNDAMENTALS AND AIRPLANE SYSTEMS - 10 HOURS

- I. STAGE TWO OBJECTIVES: To develop the student's knowledge of safe airplane operations, basic aerodynamics, operating limitations, performance data and airplane systems.
- II. STAGE TWO COMPLETION STANDARDS: This stage will be complete when the student passes the Stage Two written examination with a 70%.

LESSON ONE

- A. OBJECTIVE: To familiarize the student with the four basic flight fundamentals.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. Three axis of the aircraft and respective controls
3. Four basic flight maneuvers
 - a. Straight and level
 1. Lift
 2. Weight
 3. Thrust
 4. Drag
 5. Inside and outside reference used

- b. Turns
 - 1. Aileron drag
 - 2. Use of rudder
- c. Climbs and descents
- d. Use of trim in all maneuvers
- 4. Stability
 - a. Static
 - b. Dynamic
- 5. Angle of attack and relation to stall
- 6. Loads and load factors
 - a. Definitions
 - b. Effect of bank angle on load factor and stall
 - c. Effect of turbulence on load factor
 - d. Effect of speed on load factor

B. **COMPLETION STANDARDS:** This lesson will be complete when the student demonstrates through oral discussion a basic understanding of basic flight maneuvers, control of the airplane about the three axes, load factors, stability and stalls.

LESSON TWO

A. **OBJECTIVE:** This lesson will be used to familiarize the student with the aircraft owner's manual, performance charts and weight and balance computations.

CONTENT;

- 1. Jeppesen Sanderson, Private Pilot Manual
- 2. Cessna 152 Owner's Manual
- 3. Performance charts
 - a. Takeoff and landing distance computations
 - b. Fuel consumption and related charts
 - c. Power settings for maximum power and maximum endurance
- 4. Weight and Balance
 - a. Definition of terms
 - b. Effects of different loading configurations
 - c. Computation of sample weight and balance problems
 - 1. Finding loaded weight
 - 2. Finding C.G.

B. **COMPLETION STANDARDS:** This lesson will be complete when through oral discussion, the student demonstrates an understanding of performance charts, weight and balance computation and effects of the location of C.G.

LESSON THREE

- A. OBJECTIVE: This lesson will be used to review Lesson 2 and to introduce the student to fundamental flight maneuvers.

CONTENT:

1. Review Lesson 2
2. Introduction
 - a. Maneuvering at minimum controllable airspeed
 - b. Stalls
 1. Power off in various configurations
 2. Power on in various configurations
 - c. Steep turns
 - d. Ground reference maneuvers
 1. Effects of wind on flight path
 2. Rectangular patterns
 3. Turns about a point
 4. S-Turns across a road

- B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates, through oral discussion, a basic knowledge of the fundamental flight training maneuvers.

LESSON FOUR

- A. OBJECTIVE: This lesson will be used to introduce the student to traffic pattern operations and basic attitude instrument flight.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. Introduction
 - a. Takeoffs and landings
 1. Traffic patterns
 2. Normal takeoffs and landings
 3. Short and soft field takeoffs and landings
 4. Go arounds and rejected landings
 - b. Maneuvering by reference to flight instruments
 1. Straight and level
 2. Turns
 3. Climbs and descents
 4. Recovery from unusual attitudes

- B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates through oral discussion an understanding of takeoffs and landings, traffic patterns, go arounds and rejected landings, and the principles of basic attitudes instrument flying.

LESSON FIVE

- A. **OBJECTIVES:** This lesson will be used to introduce the student to aircraft systems and instrumentation.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. Introduction
 - a. Principles of airplane structures
 1. Construction features
 2. Flight control systems
 3. Rigging
 - b. Principles of propellers
 - c. Principles of reciprocating airplane engines
 1. Construction features
 2. Principles of operations
 3. Engine systems
 - a. Lubrication
 - b. Ignition
 - c. Fuel
 4. Instrumentation
 5. Operating limitations
 6. Malfunctions and remedial actions
 - d. Airplane hydraulic systems
 - e. Airplane electrical systems
 - f. Aircraft flight instrumentation
 1. Pitot-static
 2. Vacuum
 - g. Principles of operation of the magnetic compass

- B. **COMPLETION STANDARDS:** This lesson will be complete when the student demonstrates through oral discussion a basic knowledge of aircraft structure, systems and instrumentation.

LESSON SIX - STAGE TWO EXAMINATION

The time for this exam has been included in the 10 hours for this stage as well as the 40 hours for the Ground Training Course.

STAGE THREE - NAVIGATION - 10 HOURS

- I. **STAGE THREE OBJECTIVES:** To develop the student's knowledge of navigation principles, radio aids to navigation, the ability to plot a cross country flight using dead reckoning, pilotage, and radio for navigation and communications; to develop and use a cross country navigation log.
- II. **STAGE THREE COMPLETION STANDARDS:** This stage will be complete when the student passes the Stage Three written examination with a 70%.

LESSON ONE

AIRP 1417

- A. OBJECTIVE: This lesson will be used to familiarize the student with aircraft radios and their use in communicating with air traffic control facilities.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
 2. Aeronautical Information Manual (AIM)
 3. Operation of the communications radio equipment
 4. High density airport operations
 - a. ATIS
 - b. Approach control
 - c. Tower operations
 - d. Ground control operations
 - e. UNICOM
 - f. Review of ATC light signals
 - g. Collision avoidance procedures
 5. Flight Service Station Services
- B. COMPLETION STANDARDS: This less will be complete when the student demonstrates through oral discussion a working knowledge of communication in the aviation environment.

LESSON TWO

- A. OBJECTIVES: This lesson will be used to introduce the student to the various VFR navigation charts, the symbol used on the charts, and various airspaces shown on the charts.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
 2. VFR sectional chart (San Antonio)
 3. Description of scales used
 4. Chart symbols
 - a. Airports
 - b. Obstacles
 - c. Terrain
 - d. Chart legend
 5. Airspace
 - a. Uncontrolled
 - b. Controlled
 - c. Class A, B, C, D, E and G
 - d. Special use
 1. MOA
 2. Restricted and Prohibited
 3. Alert
 4. Wildlife refuge
- B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates through oral discussion a working knowledge of the VFR charts used in navigation

LESSON THREE - AVIATION NAVIGATION COMPUTER (E6-B)

- A. OBJECTIVE: This lesson will be used to familiarize the student with operation of the E6-B type flight computer used in aviation navigation.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. E6-B computer and operating handbook
3. “Front” side of E6-B
 - a. Identification of the features
 - b. Basic time/distance calculations
 - c. True airspeed and density altitude calculations
 - d. Fuel consumption calculations
 - e. “Combination” problems requiring several steps
4. “Back” side of E6-B
 - a. Identification of features
 - b. Wind triangle problems
5. Combination problems using both sides of computer

- B. COMPLETION STANDARDS: This less will be complete when the student can use the E6-B computer with little help from the instructor in solving various problems using the features of the E6-B.

LESSON FOUR - CROSS COUNTRY PLANNING

- A. OBJECTIVES: This lesson will be used to familiarize the student with the steps and techniques used to plan a VFR cross country using the E6-B, navigation plotter, VFR sectional chart, and cross country navigation log.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. Definition of terms
 - a. Dead reckoning navigation
 - b. Pilotage navigation
3. Introduction of navigation log
4. Introduction of navigation plotter
 - a. Identification of features
 - b. Definition of terms
5. Planning a cross country
 - a. Drawing a true course
 - b. Solving a true airspeed problem using the E6-B
 - c. Solving a wind triangle problem using the E6-B
 - d. Identification of checkpoints
 - e. Filling out the navigation log

- B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates the ability to plan a VFR cross country using the VFR navigation chart, E6-B, plotter and navigation log.

LESSON FIVE - RADIO NAVIGATION

- A. OBJECTIVES: This lesson will be used to familiarize the student with various radio aids to navigation and how to use them to supplement dead reckoning and pilotage navigation.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. Introduction

- a. VOR navigation
 - 1. Identification of features
 - 2. Use of VOR equipment for navigation
 - b. ADF navigation
 - 1. Identification of features
 - 2. Use of NDB stations and ADF receivers
 - c. Familiarization of DME
 - d. Familiarization of RNAV and GPS navigation
- B. **COMPLETION STANDARDS:** This lesson will be complete when the student demonstrates through oral quizzing and practical application with training aids an understanding of VOR and ADF navigation. At the completion of this lesson the instructor may assign a cross country flight for the student to plan as a homework assignment.

LESSON SIX - STAGE THREE WRITTEN EXAM

This lesson will be used for the administration of the Stage Three Exam.

STAGE FOUR - METEOROLOGY, PHYSIOLOGY OF FLIGHT AND JUDGEMENT - 10 HOURS

- I. **STAGE FOUR OBJECTIVES:** This stage will be used to familiarize the student with basic meteorology, the physiology of flight, and introduce factors of judgment training.
- II. **STAGE FOUR COMPLETION STANDARDS:** This stage will be complete when the student completes the stage check written with a minimum of 70%.

LESSON ONE - AVIATION WEATHER BASICS

- A. **OBJECTIVE:** During this lesson the student will be instructed in the fundamentals of weather as associated with the operation of the aircraft.

CONTENT:

- 1. Jeppesen Sanderson, Private Pilot Manual
 - 2. Aviation weather basics
 - a. Layers of the atmosphere
 - b. Pressure patterns and circulation
 - c. Temperature, moisture and inversions
 - d. Stability and lapse rates
- B. **COMPLETION STANDARDS:** This lesson is complete when the student demonstrates through oral discussion an understanding of weather basics to include composition of the atmosphere, pressure patterns, temperature, moisture and concepts of stability.

LESSON TWO - AIR MASSES

- A. **OBJECTIVE:** This less will be used to introduce the student to the characteristics of air masses, cloud types and their relation to each other.

CONTENT:

- 1. Jeppesen Sanderson, Private Pilot Manual
- 2. Air masses
 - a. Source regions
 - b. Types of air masses

- c. Characteristics of air masses
- 3. Cloud types

B. COMPLETION STANDARDS: This lesson will be complete when the student can demonstrate through oral discussion a working knowledge of air masses and their effect on VFR operations.

LESSON THREE - WEATHER FRONTS

A. OBJECTIVE: This lesson will be used to introduce the student to weather fronts

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. Types and characteristics of weather fronts
 - a. Cold
 - b. Warm
 - c. Stationary
 - d. Occluded

B. COMPLETION STANDARDS: This lesson will be complete when the student can demonstrate through oral discussion the types and characteristics of weather fronts and their effect on VFR operations.

LESSON FOUR - HAZARDOUS WEATHER

A. OBJECTIVE: This lesson will be used to introduce the student to hazardous weather and the effect it causes on aviation operations.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. Hazardous Weather
 - a. Fog
 1. Radiation
 2. Advection
 3. Up-slope
 4. Precipitation induced
 - b. Icing
 1. Injection
 2. Clear
 3. Rime
 4. Mixed
 - c. Thunderstorms
 1. Conditions required
 2. Types
 - a. Air mass
 - b. Frontal
 - c. Nocturnal
 - d. Orographic
 3. Squall lines

B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates an understanding of hazardous weather through oral discussion.

LESSON FIVE - AVIATION WEATHER REPORTS

- A. OBJECTIVES: This lesson will be used to introduce the student to various aviation weather reports and forecasts.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. Aviation weather report
 - a. Hourly sequence reports
 - b. Pilot reports
3. Aviation weather forecasts
 - a. Terminal Aerodrome Forecasts
 - b. Area Forecasts
 - c. Winds Aloft forecasts
 - d. Hazardous weather forecasts

- B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates the ability to read and intercept the aviation weather reports and forecasts.

LESSON SIX - AVIATION WEATHER CHARTS

- A. OBJECTIVE: This lesson will be used to introduce the student to various aviation weather charts.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. Aviation weather charts
 - a. Surface analysis chart
 - b. Radar report chart
 - c. Surface prognosis chart

- B. COMPLETION STANDARDS: This lesson will be complete when the student can demonstrate the ability to intercept the various aviation weather charts and explain their effect on aviation operations.

LESSON SEVEN - MEDICAL FACTS FOR PILOTS AND JUDGEMENT TRAINING

- A. OBJECTIVE: This lesson will be used to introduce the student to medical facts, a review of oxygen requirements, and an introduction to the hazardous thought patterns.

CONTENT:

1. Jeppesen Sanderson, Private Pilot Manual
2. Aeronautical Information Manual (AIM)
3. FAR Part 91
 - a. Oxygen requirements
 - b. Hypoxia
 - c. Hyperventilation
 - d. Factors concerning scanning techniques
 - e. Night operation
 - f. IMSAFE acronym
4. Judgment training
 - a. Factors effecting judgment
 - b. Identification of hazardous thought patterns

- B. **COMPLETION STANDARDS:** This lesson will be complete when the student demonstrates through oral discussion a working knowledge of medical factors effecting safe flight, an understanding of the five hazardous thought patterns and techniques to be used in proper scanning.

LESSON EIGHT - STAGE FOUR WRITTEN EXAM

At the discretion of the instructor, this exam may be comprehensive for the entire ground school course or just this stage four.