I. INTRODUCTION

A. The training course outline meets all the curriculum requirements for the Commercial Pilot Certification Course with a Single-engine Land rating contained in Part 141.
B. The training syllabus herein contains a separate ground training course. See Appendix D, Commercial Pilot Certification Course - Airplane Single Engine Land Ground Training. It is to be used in conjunction with AIRP 1341 and AIRP 1451 as part of the total Commercial Pilot Certification along with AIRP 2239.

II. OVERALL OR GENERAL OBJECTIVES OF THE COURSE

The purpose of this course is to provide the student with the necessary aeronautical knowledge to meet the prerequisites specified in Part 61 for the Commercial Pilot Written and Practical Tests.

III. TRAINING COURSE COMPLETION STANDARDS

This course will have been successfully completed when the student has demonstrated, through oral and written tests, the completions standards of each stage contained herein.

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 www.ctcd.edu/books

VI. COURSE REQUIREMENTS

Due to the technical nature of this class, the regulatory requirements for attendance as imposed by the FAR’s, and the need to acquire knowledge to maintain a high level of Aviation safety, attendance is mandatory. Any absences will have to be made up with individual instruction.

VII. EXAMINATIONS

There will be an examination at the completion of each stage with the final exam being comprehensive of the entire course. A student must achieve a minimum score of 70% on exams or receive additional instruction and take a make-up exam

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APPENDIX A
COMMERCIAL PILOT CERTIFICATION COURSE
AIRPLANE SINGLE ENGINE LAND
GROUND TRAINING

STAGE ONE - FEDERAL AVIATION REGULATIONS

I. STAGE ONE OBJECTIVES: To develop the student’s knowledge of the Federal Aviation Regulations pertinent to Commercial Pilot, operations, including an increased knowledge of the general operating rules that apply to all general aviation operations.

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 review pertinent parts of FAR Part 61 pertinent to logging of flight time, flight reviews, and recency of experience; Review pertinent parts of FAR Part 67 Medicals.

CONTENT:

1. FAR Part 61
   a. Classes of flight time and how it may be logged
   b. Requirements for completing a flight review
   c. Requirements for logging recency of experience
2. Review of FAR Part 67

B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates through oral quizzing, at least Private Pilot Knowledge of FAR Part 61 requirements for recency of experience, conduct of flight reviews and FAR Part 67 classes of medical certificates.

LESSON TWO

A. OBJECTIVE: To review requirements for issuing certificates and ratings, authorizations and restrictions on the Commercial Pilot certificate, and the specific requirements to qualify for the Commercial Pilot Certificate with an Airplane Category.

CONTENT:

1. FAR Part 61
   a. Prerequisites for practical tests
   b. Practical tests: General procedures
2. FAR Part 61 Subpart F (Commercial Pilots)

B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates, through oral quizzing, an understanding of the requirements for the issuance of any certificate or rating and specifically, the requirements for the Commercial Pilot - Airplane certificate.
LESSON THREE

A. OBJECTIVE: To increase the student’s awareness of pertinent parts of FAR Part 91 that deal with general operations appropriate for all US civil aviation and NTSB.

CONTENT:

1. FAR Part 91
   a. Subpart A
   b. Subpart B
   c. Subpart C
   d. Subpart D
   e. Subpart E
2. NTSB Part 830

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.

STAGE ONE WRITTEN EXAM: Exam will cover FAR’s and NTSB Part 830

STAGE TWO - BASIC AERODYNAMICS

STAGE TWO OBJECTIVES: This stage will be used to increase the student’s knowledge of basic aerodynamics to include forces acting on an aircraft, stability, turning tendencies, torque effect, principles of airfoils, and the performance of the aircraft in various phases of flight.

STAGE TWO COMPLETION STANDARDS: This stage will be complete when the student passes the stage written exam with a minimum score of 70%.

LESSON ONE - Basic aerodynamics

B. OBJECTIVE: This lesson will be used to review basic aerodynamics and to increase the student’s awareness of the forces acting on an airplane in flight.

CONTENT:

1. Aerodynamic Forces
   a. Four forces
   b. Forces acting on an aircraft in a turn
   c. Torque and left turning tendencies
2. Stability

C. COMPLETION STANDARDS: This less will be complete when the student demonstrates through oral quizzing an increased knowledge of basic aerodynamics and stability.

LESSON TWO - Principles of airfoils and the concept of energy management

A. OBJECTIVE: This lesson will be used to increase the student’s awareness of how airfoils work, their purpose, and to introduce the concept of energy management in various flight regimes.
CONTENT:

1. Airfoils
   a. Principles of physics as they apply to airfoils
   b. Location, purpose and proper use of primary airfoils
2. Concepts of energy management
   a. Definition of energy
   b. Relation of mass to velocity in various flight maneuvers, i.e. radius of turns, glides and landings

B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates an increased awareness of airfoils and energy management in reference to flight maneuvers.

LESSON THREE - Performance Charts

A. OBJECTIVES: This lesson will be used to allow the student to increase proficiency in the use of typical performance charts in general aviation and to introduce the student to advanced types of jet performance charts.

CONTENT:

1. Performance charts in a typical general aviation aircraft
   a. Weight and balance computation and effects on stability and performance
   b. Takeoff and landing charts
   c. En route performance charts to include climb and descent charts
2. Typical jet performance charts
   a. Takeoff and landing
   b. Cruise charts to include range and endurance

B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates an increased ability to use typical general aviation performance charts, and through oral quizzing, an understanding of typical jet performance charts

STAGE TWO WRITTEN EXAM: Exam will cover Stage One and Stage Two material

STAGE THREE - AIRCRAFT SYSTEMS AND BASIC METEOROLOGY

STAGE THREE OBJECTIVES: This stage will be used to instruct the student in advanced aircraft systems and to reinforce previous knowledge of basic meteorology concepts.

STAGE THREE COMPLETION STANDARDS: This stage will be complete when the student passes the stage written exam with a minimum grade of 70% and demonstrates through oral quizzing a knowledge of basic meteorology and aircraft systems.

LESSON ONE - Basic aircraft systems

A. OBJECTIVE: This lesson will be used to review basic aircraft systems

CONTENT:
1. How to study aircraft systems
   a. Description of system
   b. Normal operation procedures to include limitations
   c. Abnormal procedures
2. Basic aircraft systems
   a. Typical fuel systems
   b. Components of typical electrical systems
   c. Typical hydraulic systems
   d. Landing gear and flap systems
   e. Propeller systems

B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates through oral quizzing an increased knowledge of basic aircraft systems.

LESSON TWO - Environmental systems

A. OBJECTIVE: This lesson will be used to review. And if necessary, introduce the student to typical environmental systems associated with general aviation aircraft.

CONTENT:

1. Basic aircraft environmental systems
   a. Heating and ventilation systems
   b. Oxygen systems and proper use
2. Pressurization system
   a. Components
   b. Proper use

B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates an increased knowledge of typical aircraft environmental systems and their proper use.

LESSON THREE - Basic Meteorology

A. OBJECTIVE: This lesson will be used to review basic concepts of meteorology to include circulation, fronts and air masses.

CONTENT:

1. Effects of solar heating on air mass circulation
2. Air masses, their origins and modifiers
3. Classes of fronts and their characteristics

B. COMPLETION STANDARDS: This lesson will be completed when the student demonstrates through oral quizzing an increased knowledge of air masses, their origins and modifiers; be able to explain the characteristics of various fronts.

LESSON FOUR - Hazardous Weather Phenomenon

A. OBJECTIVE: This lesson will be used to review hazardous weather and the dangers it imposes on aviation operations.
CONTENT:

1. Thunderstorms
   a. Causes of thunderstorms
   b. Types of thunderstorms
   c. Hazards to flight operations caused by thunderstorms
2. Fog
   a. How fog forms
   b. Types of fog
   c. Hazards to flight operations caused by fog
3. Ice
   a. How ice forms
   b. Types of ice
   c. Hazards to flight operations caused by ice
4. Low level wind shear - causes and hazards

B. COMPLETION STANDARDS: This lesson is complete when the student demonstrates an increased awareness of hazardous weather through discussion and oral quizzing.

LESSON FIVE - Weather reports, Forecasts and Weather Briefings

A. OBJECTIVE: To review types of weather reports and forecasts and to increase the student’s ability to obtain and use a proper weather briefing.

CONTENT:

1. Methods of obtaining official weather briefings
2. Pilot actions in obtaining weather information
3. Types of weather briefings
4. Standard weather briefing format
   a. Hazardous weather
   b. Synopsis
   c. Specific current conditions
   d. Forecast conditions
   e. Winds aloft
   f. NOTAM’s - Classes and how to obtain them
5. How different forecasts and charts relate to existing conditions.

B. COMPLETION STANDARDS: This lesson will be complete when the student demonstrates through oral quizzing and discussion an increased knowledge of weather reports, forecasts and their relationship to each other.

STAGE THREE WRITTEN EXAM: Stage Three exam will cover all material covered in the course to date.

STAGE FOUR - NAVIGATION AND ADVANCED TRAINING MANEUVERS

STAGE FOUR OBJECTIVES: To review basic navigation procedures and to introduce the student to advanced training maneuvers to include a review of stall/spin awareness

STAGE FOUR COMPLETION STANDARDS: This stage will be complete when the student passes the stage written with a 70% and demonstrates through oral quizzing an increased knowledge of the basic navigation procedures, a working knowledge of advanced training maneuvers and an increased awareness of stall/spin accidents.

LESSON ONE - E6-B and Dead-reckoning navigation
A. OBJECTIVES: This lesson will be used to review operation of the mechanical E6-B flight computer and procedures used in dead reckoning navigation.

CONTENT:

1. Review of E6-B computations, both front and back sides
   a. Steps in planning a VFR cross country
   b. Weight and balance computations
   c. Determining courses, ground speeds, range
   d. Selection of checkpoints, time en route, fuel consumption and refueling points
   e. Developing a VFR navigation log

B. COMPLETION STANDARDS: This lesson is complete when the student demonstrates proficiency in the use of E6-B and an increased knowledge of dead-reckoning procedures.

LESSON TWO - Radio Navigation Procedures

A. OBJECTIVES: To increase the student’s proficiency in the use of radio aids for navigation.

CONTENT:

1. Types of radio navigation
   a. Low frequency navigation aids
   b. VHF frequency navigation aids
   c. Area navigation systems to include global positioning systems
2. Use of NDB and ADF ground and airborne equipment
3. Use of VOR ground and airborne equipment
4. Use of area navigation, LORAN and GPS systems

B. COMPLETION STANDARDS: This lesson is complete when the student demonstrates through oral quizzing and discussion a working knowledge of the various types of radio navigation systems.

LESSON THREE - Practice cross country planning using dead-reckoning and radio navigation

A. OBJECTIVE: This lesson will be used to plan a VFR cross country using the types of navigation discussed with the exclusion of area and Global Positioning systems.

CONTENT:

1. Planning a VFR cross country using weather information obtained earlier by the student
2. Developing a cross country navigation log

B. COMPLETION STANDARDS: This lesson is complete when the student presents a completed, correct navigation log and indicates increased knowledge of navigation procedures.

LESSON FOUR - Advanced training maneuvers

A. OBJECTIVES: To introduce the student to the advanced training maneuvers covered in the Commercial Pilot - Airplane Practical Test Standards or equivalent.

CONTENT:

1. Advanced training maneuvers
   a. Chandelles
   b. Lazy 8's
   c. Pylon 8's
2. Stall/spin awareness
a. Common causes of stall/spin accidents  
b. Techniques to avoid stall/spins  
c. Spin recovery techniques

B. COMPLETION STANDARDS: This lesson is complete when the student demonstrates through oral quizzing and discussion a working knowledge of the advanced training maneuvers and an increased awareness of techniques to avoid stall/spin accidents.

STAGE FOUR WRITTEN EXAM: Stage Four Written Exam will be comprehensive exam covering all stages of the Commercial Pilot ground school syllabus.