I. INTRODUCTION

A. This training course outline is based on FAR 141.57 Special Curricula - that meets or exceeds the requirements of Part 61 for an additional instructor rating.
B. The flight training syllabus contains only the flight training, ground instruction and practice instruction which will be conducted at the Killeen Municipal Airport.
C. The flight training will consist of 15 hours of dual instruction which will be used to meet the Pilot in Command requirements and will include 20 hours of ground instruction.
D. See Appendix II of this syllabus for a listing of aircraft, training aids, facilities, and instructor qualifications.

II. ENROLLMENT PREREQUISITES

A. The student must hold a Commercial Pilot Airplane Certificate with an Instrument rating and a valid airplane flight instructor certificate.
B. The student must hold a current CLASS II MEDICAL Certificate.
C. The student must be issued a certificate of enrollment.

III. OVERALL OR GENERAL OBJECTIVES OF THE COURSE

This course will prepare the student to add the multi-engine airplane class rating to their flight instructor certificate.

IV. COMPLETION STANDARDS AND COURSE REQUIREMENTS

This course will be complete when the student has demonstrated through stage check and school records that the student has the necessary skills and experience to obtain a multi-engine airplane flight instructor class rating.

V. NOTE - (VR) means Visual References and (IR) means Instrument References

08/2008
VI COURSE OUTLINE

A. FLIGHT LESSON ONE - GROUND INSTRUCTION

1. OBJECTIVES: The student will receive ground instruction on the required documents and certificate, A/C limitation, A/C pre-flight procedures, engine starting, taxi procedures, engine run-up and the use of the aircraft checklist.

2. CONTENT:
   a. A/C Documents, certificates and limitations
   b. A/C performance
   c. Weight and Balance
   d. A/C pre-flight
   e. Engine starting
   f. Taxi procedures
   g. Engine run-up procedures
   h. Uses of A/C checklist
   i. Collision Avoidance
   j. Wake turbulence

3. COMPLETION STANDARDS: This lesson is complete when the student demonstrates an understanding of preflight, use of checklists and taxi and run-up procedures.

B. LESSON TWO - DUAL

1. OBJECTIVES: The student will be familiarized with the training aircraft, its operating characteristics, cabin controls, instruments and systems, preflight procedures, use of checklists and safety precautions to be followed. The student will also be instructed in medium and steep banked turns and flight at minimum controllable airspeed.

2. CONTENT:
   a. Preflight discussion
   b. Introduction
      1) Preflight duties
      2) Importance of using the checklists
      3) Engine starting
      4) Taxi
      5) Engine control operation during flight - VR and IR
      6) Medium and steep banked turns - VR and IR
7) Collision avoidance
8) Traffic pattern entry
9) Pre-landing checklist
10) Flight at minimum controllable airspeed

c. Post flight critique and preview of next lesson

3. **COMPLETION STANDARDS**: At the completion of this lesson, the student should be able to conduct a preflight inspection, use checklists appropriate to the operation, make engine run-ups, maintain altitude in straight and level flight turns and at minimum controllable airspeed with 100 feet, airspeed within 5 knots and headings with 10 degrees.
C. LESSON THREE - DUAL

1. **OBJECTIVES:** The student will be instructed in starting and warming up the engines, determining the aircraft’s readiness for flight and maneuvering safely on the surface. Will also be instructed in the proper procedure for normal takeoffs and landings, in controlling the aircraft in steep banked turns with maintenance altitude and orientation of heading, in slow flight with both engines operating and stall characteristics in both the landing and takeoff configuration.

2. **CONTENT:**

   a. Preflight discussion
   b. Review
      1) Engine starting
      2) Ground operation
      3) Pre-takeoff checks
      4) Flight at minimum controllable airspeed
      5) Steep turns - VR and IR
      6) Normal takeoffs and landings
   c. Introduce
      1) Steep turns
      2) Climbs and appropriate power settings - IR and VR
      3) Descents and appropriate power settings VR and IR
      4) Stall recognition and recovery in both the landing and takeoff configuration
      5) Post lesson critique and assignment of the next lesson
   d. Post flight critique and preview of next lesson

3. **COMPLETION STANDARDS:** Pre-flight operations will be evaluated on the accuracy of procedures used, the thoroughness of engine and systems checks. Taxing performance will be evaluated on the basis of technique, judgment, coordination and smoothness. Slow flight and steep turns will be evaluated on the basis of maintenance of altitude within 100 feet of entry altitude, bank within 10 degrees and rollout within 10 degrees of assigned heading. Stall recovery will be evaluated on the basis of proper recovery technique within minimum loss of altitude.

D. LESSON FOUR - DUAL

1. **OBJECTIVES:** Additional instruction will be given in takeoffs and landings in all normally anticipated conditions, stall recognition and recovery, flight at minimum controllable airspeed and emergency descents. The student will be instructed in the effect of drag caused by the aircraft gear, flaps and wind milling propeller.

2. **CONTENT:**
a. Preflight discussion
b. Review
   1) Flight at minimum controllable airspeed - VR and IR
   2) Steep turns - VR and IR
   3) Normal climbs and descents - VR and IR
   4) Normal takeoffs and landings
c. Introduction
   1) Effect of the drag from flaps, gear and wind milling propeller
   2) Emergency descents
d. Post-flight critique and preview of next lesson

3. COMPLETION STANDARDS: The student will be evaluated on the basis of prompt and correct control applications during stall demonstrations to achieve desired altitude and maintain desired heading. Takeoffs and landings will be evaluated on the basis of technique, judgment, observance of traffic patterns, drift correction, coordination and smoothness.

E. LESSON FIVE - GROUND INSTRUCTION

1. OBJECTIVES: This lesson will be used to instruct the student in the correct procedures for engine loss in the cruise condition, including recognition of inoperative engine, trouble shooting, feathering, maneuvering single engine, air restart, manual extension and troubleshooting the landing gear system and the factors affecting single-engine rate of climb and single-engine performance.

2. CONTENT:
   a. Identifying lost engine
   b. Determining probable cause of lost engine
   c. Feathering dead engine
   d. Maneuvering single-engine (including proper airspeeds and Vmc)
   e. Air restart procedures
   f. Troubleshooting electrical systems
   g. Troubleshooting and manual extension of landing gear

3. COMPLETION STANDARDS: The ground lesson will be completed when the student has the working knowledge to identify, troubleshoot, feather, proper airspeeds to obtain un-feather, air restart and can determine probable cause of electrical system and landing gear malfunction and the factors affecting single-engine performance and rate of climb.

F. LESSON SIX - DUAL

1. OBJECTIVES: The student will be instructed in crosswind as well as short
and soft field takeoffs and landings. Additionally, instruction will be given in possible contingencies which could arise while in the process of takeoffs and landings. All the instructional activity will include stalls, steep turns and flight at minimum controllable airspeeds.

2. CONTENT:

a. Preflight discussion
b. Review
   1) Flight at minimum controllable airspeed - VR and IR
   2) Approach to landing, stalls and recoveries - VR and IR
   3) Takeoff and departure type stalls
   4) Normal takeoffs and landings
c. Introduction
   1) Short field takeoffs and landings
   2) Soft field takeoffs and landings
   3) Rejected landings
   4) Crosswind takeoffs and landings
   5) Wake turbulence avoidance
d. Post-flight critique and preview of next lesson

3. COMPLETION STANDARDS: The student’s performance will be evaluated on the basis of takeoffs and landing techniques, judgment, observance of traffic patterns, drift correction, maintenance of proper airspeed and smoothness. Stall performance will be evaluated on the basis of stall recognition and promptness and smoothness of recovery.
G. LESSON SEVEN - DUAL

1. OBJECTIVES: The student will receive instruction in correct procedures for feathering and shutting down an engine in flight and in maneuvering an airplane effectively and safely with an engine inoperative.

2. CONTENT:
   a. Preflight discussion
   b. Introduction
      1) Engine loss cruise condition - VR and IR
         a) Recognition of inoperative engine
         b) Maintenance of airspeed and heading
         c) Feathering the inoperative engine
         d) Shutting down the inoperative engine
         e) Maneuvering with an engine out
      2) Manual extension of landing gear
      3) Restarting and un-feathering - VR and IR
   c. Post-flight critique and preview of next lesson

3. COMPLETION STANDARDS: The student will be evaluated on the basis of his ability to promptly identify the inoperative engine, proper procedures for shutting down and engine, feathering, un-feathering and restarting. The student will be evaluated on his ability to maintain heading within 20 degrees of original heading and altitude within 100 feet of original altitude while feathering and un-feathering.

H. LESSON EIGHT - GROUND INSTRUCTION

1. OBJECTIVE: The ground instruction given during this period will afford the student the knowledge and capability of executing a safe approach and landing, including identifying lost engine, feathering procedures, airspeeds and altitude control and rejected landings (single and multi-engine). A review of weight and balance, A/C performance, Vmc and emergency procedures will be included in this lesson.

2. CONTENT:
   a. Single-engine approach and landing
   b. Single-engine airspeeds and altitude control
   c. Rejected landings (single and multi-engine)
   d. Weight and Balance
   e. A/C performance
   f. Vmc and contributory factors
   g. Emergency procedures (electrical system, landing gear system and fuel system)
3. **COMPLETION STANDARDS**: The student will be evaluated on the basis of his knowledge for determining the dead engine, feathering procedures, weight and balance, Vmc and associated factors, emergency procedures for electrical and landing gear systems and fuel systems.
I. LESSON NINE - DUAL

1. OBJECTIVE: This lesson will be utilized to develop the students ability to apply the engine out best rate of climb speed and best angle of climb speed as obstruction clearance requirements may dictate. Additionally, the student will be made aware of the detrimental effects on engine out performance of various airplane configurations and will be placed in a position to evaluate these effects in unfamiliar airplanes.

2. CONTENT:
   a. Preflight discussion
   b. Review: factors affecting minimum single-engine control speed
   c. Introduction
      1) Establishment of best single engine rate of climb speed - VR and IR
      2) Establishment of best single engine angle of climb speed - VR and IR
      3) Engine out procedures on takeoff
         a) Best single engine rate of climb speeds
         b) Best single engine angle of climb speeds
         c) Go or no go procedures for engine out on takeoff
   d. Post-flight critique and preview of next lesson.

3. COMPLETION STANDARDS: The student will be evaluated on his ability to attain and maintain the best single engine angle and rate of climb airspeeds and on his knowledge of the effects of configuration on these speeds. If engine out best angle of climb speed is reached when the engine is throttled, the student should be able to continue takeoff, clean up the A/C and accelerate to best rate of climb speed while maintaining heading.

J. LESSON TEN - DUAL

1. OBJECTIVES: This lesson will be used to introduce the student to multi-engine instrument flying. The student will be instructed in instrument approaches, missed approach procedures, entering and departing holding patterns and recovery from unusual attitudes.

2. CONTENT:
   a. Preflight discussion
   b. Review
      1) Basic instruments
      2) Engine out procedure
      3) Recognition and recovery from imminent stalls
   c. Introduction
      1) Recovery from unusual attitudes
2) Entering and departing holding patterns
3) Instrument approaches
4) Missed approach procedure

D. Post-flight critiques and preview of next lesson

3. COMPLETION STANDARDS: The student will be evaluated on the basis of proper operations of aircraft systems, maintaining altitude within 100 feet and airspeed with 10 knots, entering and departing holding patterns and executing instrument approaches.
K. LESSON ELEVEN - GROUND INSTRUCTION

1. OBJECTIVES: This ground instruction will be used by the instructor as a comprehensive review of the maneuvers, procedures and aircraft performance and limitations in preparation for the Stage One Stage Check.

2. CONTENT:
   a. Certificates and documents
   b. Weight and balance
   c. Cross country planning and weather
   d. Aircraft performance and limitations
   e. Collision avoidance
   f. Wake turbulence avoidance
   g. Aircraft systems and components
   h. Emergency procedures (systems and components)
   i. Single-engine procedures at altitudes (feathering, air restart and troubleshooting)
   j. Single-engine takeoffs and landings
   k. Rejected landings (single and multi-engine)
   l. Vmc and associated factors
   m. In-flight emergencies (in-flight fire, etc.)

3. COMPLETION STANDARDS: The student will be evaluated on his ability and knowledge in the above area. Upon completion of this lesson, the student will have the necessary knowledge to successfully complete the written and oral examination for the Stage One Stage Check.

L. LESSON TWELVE - DUAL

1. OBJECTIVES: This lesson will be a comprehensive review of all maneuvers and procedures to determine the applicants proficiency in a multi-engine airplane.

2. CONTENT:
   a. Preflight discussion
   b. Review
      1) Flight at minimum controllable airspeed - VR and IR
      2) Approach to landing type stalls - VR and IR
      3) Takeoffs and departure type stalls - VR and IR
      4) Steep turns - VR
      5) Emergency descents
      6) Demonstration of minimum single-engine control speed
      7) Identifying, feathering and shutting down an engine in flight - VR and IR
      8) Single-engine approach and landing (simulated - zero
9) Crosswind takeoffs and landings
10) Short field takeoffs and landings
11) Soft field takeoffs and landings
12) Rejected landings
13) Manual extension of landing gear
14) Unusual attitudes
15) Instrument approaches
c. Post-flight critique and preview of Stage One Check

3. COMPLETION STANDARDS: The student will be evaluated on their ability to control the aircraft at minimum controllable airspeed, the various stall series, while practicing emergency descents and single-engine procedures to include feather and un-feathering procedures, land the aircraft properly while practicing the various type of landings.

M. LESSON THIRTEEN - DUAL: STAGE ONE STAGE CHECK

1. OBJECTIVES: This lesson will consist of the Stage One Stage Check to be given by the chief instructor or his assigned assistant on all procedures and maneuvers which the multi-engine pilot is expected to know. The check will consist of a written exam oral quizzing and a flight review.

2. CONTENT:
   a. Preflight discussion including a written and oral examination
   b. Review of multi-engine procedures and maneuvers - VR and IR
   c. Post-flight critique

3. COMPLETION STANDARDS: The student will demonstrate the required proficiency in the practical test for multi-engine airplane class rating. The standard of performance used will be at least that required by the FAA. Upon satisfactory completion of this lesson, the chief instructor will complete the student’s training records and issue an appropriate graduation certificate.

STAGE TWO: PRACTICE FLIGHT INSTRUCTION

STAGE TWO OBJECTIVES: To give the student the opportunity to perform and analyze the required the required maneuvers as the Flight Instructor and give five hours of supervised ground instruction on performance and maneuvers.

STAGE TWO COMPLETION STANDARDS: The stage will be complete when the student successfully demonstrates the ability to effectively give ground instruction, perform and analyze the required maneuvers for certification as multi-engine flight instructor. The student will be required to complete the Stage Two written exam with a grade of 70%.

A. LESSON ONE - SUPERVISED GROUND INSTRUCTION

1. OBJECTIVES: This period will be used by the flight instructor to introduce
the student to the methods and elements of giving proper oral instruction.

2. CONTENT:
   a. Using training syllabi
   b. Formulating lesson plans
   c. Use of training aids
   d. Elements of successful instructional periods

3. COMPLETION STANDARDS: The lesson is complete when the student successfully demonstrates the ability to use the training syllabus, formulate lesson plans and their contents, demonstrates and use training aids, prepare and administer a complete lesson.

B. LESSON TWO - SUPERVISED GROUND INSTRUCTION

1. OBJECTIVES: This period will be used by the student to formulate and give oral instruction on required maneuvers.

2. CONTENT:
   a. Present a lesson plan and give oral instruction on:
      1) Preflight
      2) Engine operations - ground
      3) Taxiing and crosswind taxiing
      4) Normal takeoffs and landings
      5) Medium and steep turns
      6) Minimum controlled airspeed

3. COMPLETION STANDARDS: The lesson is complete when the student can successfully instruct a lesson plan and give oral instruction on the required maneuvers.

C. LESSON THREE - DUAL FLIGHT

1. OBJECTIVES: This period will be used by the student, functioning as the flight instructor, to perform and analyze the maneuvers the student gave in the oral presentation.

2. CONTENT:
   a. Preflight discussion
   b. Student demonstrates, performs and analyzes these flight maneuvers:
      1) Preflight
      2) Engine operation - ground
      3) Taxiing
      4) Normal and crosswind takeoffs and landings
      5) Medium and steep banks
      6) Minimum controlled airspeed
   c. Post-flight critique and preview of next lesson
3. COMPLETION STANDARDS: The lesson is complete when the student, acting as the flight instructor, successfully demonstrates the ability to demonstrate, perform and analyze the maneuvers.

D. LESSON FOUR - SUPERVISED GROUND INSTRUCTION

1. OBJECTIVES: This period will be used by the student to formulate and give oral instruction in performance of these maneuvers.

2. CONTENT:

   a. Formulate and present a lesson plan on:
      1) Approach landing stalls
      2) Takeoffs and departure stalls
      3) Steep turns
      4) Short field takeoffs and landings
      5) Single-engine operation in flight
      6) Engine shut down and air restart

3. COMPLETION STANDARDS: The lesson is complete when the student can successfully construct a lesson and give oral instruction on the required maneuvers.

E. LESSON FIVE - DUAL FLIGHT

1. OBJECTIVES: This period will be used by the, functioning as the flight instructor, to perform and analyze the maneuvers given in the oral presentation.

2. CONTENT:

   a. Preflight discussion
   b. Student will perform and analyze the flight maneuvers
      1) Approach landing stalls
      2) Takeoff departure stalls
      3) Steep turns
      4) Short field takeoff and landings
      5) Single-engine operations in flight
      6) Engine shut down and air restart
   c. Post-flight critique and preview of next lesson

3. COMPLETION STANDARDS: This lesson will be complete when the student, acting as the flight instructor, successfully demonstrates the ability to demonstrate, perform and analyze the maneuvers.
F. LESSON SIX - SUPERVISED GROUND INSTRUCTION

1. OBJECTIVES: This lesson will be used by the student to formulate and give oral instruction in performance of these maneuvers:

2. CONTENT:
   a. Formulate and present a lesson plan on:
      1) Soft field takeoffs and landings
      2) Vmc - definition and how it is determined
      3) Factors affecting single-engine rate of climb
      4) Weight and balance
      5) Aerodynamic characteristics

3. COMPLETION STANDARDS: The lesson is complete when the student can successfully construct a lesson plan and give oral instruction on the required maneuvers.

G. LESSON SEVEN - DUAL FLIGHT

1. OBJECTIVES: This period will be used by the student, functioning as the flight instructor, to perform and analyze the maneuvers given in the oral presentation.

2. CONTENT:
   a. Preflight discussion
   b. Student will demonstrate, perform and analyze the flight maneuvers:
      1) Soft field takeoffs and landings
      2) Vmc demonstration
      3) Factors affecting single-engine rate of climb
      4) Aerodynamic characteristics
   c. Post-flight critique and preview of next lesson

3. COMPLETION STANDARDS: This lesson will be complete when the student, acting as the flight instructor, successfully demonstrates the ability to demonstrate, perform and analyze the maneuvers.

H. LESSON EIGHT - SUPERVISED GROUND INSTRUCTION

1. OBJECTIVES: This period will be used by the student to formulate and give oral instruction in performance of these maneuvers:

2. CONTENT:
   a. Formulate and present a lesson plan on:
      1) Single-engine procedures, takeoffs and landings
      2) Fuel system and operation
      3) Electrical system operation
      4) Engine oil and cooling systems
5) Propeller and governor operation
6) Rejected landings
7) Landing gear operation

3. COMPLETION STANDARDS: The lesson is complete when the student can successfully construct a lesson plan and give oral instruction on the required maneuvers.
I. LESSON NINE - DUAL FLIGHT

1. OBJECTIVES: This period will be used by the student, functioning as the flight instructor, to perform and analyze the maneuvers given in the oral presentation.

2. CONTENT:
   a. Preflight discussion
   b. Student will demonstrate, perform and analyze these flight maneuvers:
      1) Single-engine procedures, takeoffs and landings
      2) Rejected landings
      3) Basic instruments
      4) VOR holding and approach
   c. Post-flight critique and preview of next lesson

3. COMPLETION STANDARDS: The lesson is complete when the student, acting as the flight instructor, successfully demonstrates the ability to demonstrate, perform and analyze the maneuvers.

J. LESSON TEN - SUPERVISED GROUND INSTRUCTION

1. OBJECTIVES: This period will be used by the student to formulate and give oral instruction in performance of these maneuvers;

2. CONTENT:
   a. The student presents an oral lesson on cross country planning and navigation
      1) Aircraft performance charts
      2) Aircraft systems - emergency operation
      3) Emergency go around
      4) Single-engine go around
      5) Aborted takeoff

3. COMPLETION STANDARDS: The lesson is complete when the student, acting as the flight instructor, can successfully demonstrate the ability to prepare and administer a lesson on cross country planning.

K. LESSON ELEVEN - DUAL FLIGHT

1. OBJECTIVES: This period will be used by the student, functioning as the flight instructor, to perform and analyze the maneuvers given in the oral presentation.

2. CONTENT:
   a. Preflight discussion
   b. Student will demonstrate, perform and analyze these flight maneuvers:
1) Aircraft systems - emergency operations
2) Emergency go around
3) Single-engine go around
4) Aborted takeoff
5) Instrument flight
6) Normal maneuvers and recovery from unusual flight attitudes
7) Instrument approaches

3. COMPLETION STANDARDS: The lesson is complete when the student, acting as the flight instructor, successfully demonstrates the ability to demonstrate, perform and analyze the maneuvers.
L. LESSON TWELVE - DUAL FLIGHT

1. OBJECTIVES: This period will be used by the flight instructor to review the maneuvers in which the student shows a deficiency and in preparation for the Stage Two Check.

2. CONTENT:
   a. Preflight discussion
   b. Review of maneuvers
   c. Post flight critique and preview of next lesson

3. COMPLETION STANDARDS: This lesson is complete when the student successfully demonstrates the ability to demonstrate, perform and analyze the required flight maneuvers.

M. LESSON THIRTEEN - DUAL FLIGHT

1. OBJECTIVES: This period will be used by the chief instructor to administer Stage Two written exam and evaluate the student for recommendation as a multi-engine flight instructor.

2. COMPLETION STANDARDS: The lesson is complete when the student successfully completes the Stage Two written exam and can demonstrate, perform and analyze the required maneuvers.