I, ________________________________, have acquired and have in my possession a copy of the training course outline, training syllabus, and safety procedures and practices for AVIA 4622/4623, Certified Flight Instructor Multi-Engine Flying and Ground.

__________________________  ______, 20______
Student Signature

__________________________  ______, 20______
Flight Instructor Signature

__________________________  ______, 20______
Chief Flight Instructor Signature
This course fulfills the requirements of 14 CFR, Section 141, Appendix F to add an airplane multi-engine rating to a flight instructor certificate with an airplane single engine rating.

**COURSE OBJECTIVE:** The student will obtain the knowledge, skill, and aeronautical experience necessary to meet the requirements for the addition of an airplane multi-engine rating to a flight instructor certificate with an airplane single engine rating.

**COURSE COMPLETION STANDARD:** The student will demonstrate through written tests, oral tests, flight tests, and show through appropriate records that the knowledge, skill, and experience requirements necessary to add an airplane multi-engine rating to an existing flight instructor certificate with an airplane single engine rating have been met. The specific requirements for each test and stage check are described in the appropriate syllabus lesson. At the completion of the ground school the student will pass the end of course test with a score of 70%. At the completion of flight training the student will pass the practical test for addition of an airplane multi-engine rating, based on the current Flight Instructor Multi-Engine Practical Test Standards (PTS).

**AIRPORT:** Max Westheimer Airport is the operations base for training in this course. Max Westheimer Airport has a hard surface runway and meets the requirements of 14 CFR, Section 141.38 for day and night operation. Fuel is available from 7:00 A.M. to 10:00 P.M. daily. Maintenance is available from 6:30 A.M. to 3:00 P.M. Monday through Friday and at other times on call. Training will originate at Max Westheimer Airport.

**AIRCRAFT:** The aircraft to be used in this course of training are the PA44-180 and BE58. They meet the requirements of 14 CFR, Section 141.39. VFR airplanes are equipped for day and night VFR as specified in 14 CFR, Section 91.205. Airplanes used for instrument training are equipped for IFR as specified in 14 CFR, 91.205. Radio equipment will consist of at least one VHF transceiver and at least one VOR receiver.

**CHIEF FLIGHT INSTRUCTOR:** The Chief Flight Instructor will meet the requirements of 14 CFR, Section 141.35. (S)he must hold at least a commercial pilot certificate with an airplane category, multi-engine land class and airplane instrument rating. In addition, (s)he must hold a flight instructor/instrument certificate with an airplane category rating and a multi-engine class rating and have at least a second class medical certificate. See Appendix A of this Training Course Outline for Chief Flight Instructor designation.

**ASSISTANT CHIEF FLIGHT INSTRUCTOR:** The Assistant Chief Flight Instructor will meet the requirements of 14 CFR, Section 141.36. (S)he must hold at least a commercial pilot certificate with an airplane category, multi-engine land class and airplane instrument rating. In addition, (s)he must hold a flight instructor/instrument certificate with an airplane category rating and a multi-engine class rating and have at least a second class medical certificate. See Appendix A of this Training Course Outline for Assistant Chief Flight Instructor designation.

**FLIGHT INSTRUCTORS:** Each flight instructor must hold at least a commercial pilot certificate with an airplane category, multi-engine land class and airplane instrument rating. In addition, (s)he must hold a flight instructor/instrument certificate with an airplane category rating and a multi-engine class rating and have at least a second class medical certificate.

**CHIEF GROUND INSTRUCTOR:** The Chief Ground Instructor will meet the requirements of 14 CFR, Section 141.35(e). See Appendix A of this Training Course Outline for Chief Ground Instructor designation.

**ASSISTANT CHIEF GROUND INSTRUCTOR:** The Assistant Chief Ground Instructor will meet the requirements of 14 CFR, Section 141.36(e). See Appendix A of this Training Course Outline for Assistant Chief Ground Instructor designation.

**GROUND INSTRUCTORS:** Each instructor used for ground training must hold a flight instructor or advanced ground instructor certificate for this course of training.
DEPARTMENT OF AVIATION
ADDITIONAL FLIGHT INSTRUCTOR RATING COURSE –
MULTI-ENGINE AIRPLANE

OFFICE AND CLASSROOM FACILITIES USED FOR AVIATION STUDENTS: The office and classroom facilities used for the training of aviation students of the University of Oklahoma are described in Appendix D of this Training Course Outline.

COURSE ENROLLMENT: You must hold a commercial pilot certificate with an aircraft category and multi-engine land and instrument airplane rating, a flight instructor certificate with an airplane single engine land rating and at least a third class medical certificate prior to enrolling in this course.

REQUIREMENTS FOR GRADUATION: To add a multi-engine rating to your flight instructor certificate with airplane single engine land rating, you must be able to read, speak, and understand the English language and have a valid FAA third-class medical certificate and be at least 18 years of age at the completion of the course. You must complete the lessons in the syllabus and satisfy the requirements described in the Course Completion Standard on page 1.

LESSON DESCRIPTION AND STAGES OF TRAINING: Each lesson is fully described within the syllabus, including the objectives, standards, and measurable units of accomplishment and learning for each lesson. You are expected to complete the course within 90 days. The objectives and standards of each stage are described within the syllabus.

COURSE POLICY: The course policies for this course of training are outlined in Appendix B of this Training Course Outline.

TESTS AND CHECKS: The syllabus incorporates one end of course stage check in accordance with 14 CFR, Section 141, Appendix F. This check is given by the Chief, or designated Assistant Chief Flight Instructor. The student will complete the appropriate stage exams, pilot briefings, and final examinations that are described within the syllabus. The final stage check will be conducted by the Chief or Assistant Chief Flight Instructor and will be conducted in accordance with the current Flight Instructor Multi-Engine Airplane Practical Test Standards and will be at least equal in scope, depth, and difficulty to that practical test.
DEPARTMENT OF AVIATION
ADDITIONAL FLIGHT INSTRUCTOR RATING COURSE –
MULTI-ENGINE AIRPLANE
RULES OF OPERATION

DISPATCH PROCEDURES - The provisions of 14 CFR, Section 91.103 will be met prior to aircraft dispatch. The instructor will provide a preflight briefing to the student. The instructor's signature on the syllabus sheet for that lesson constitutes permission to dispatch the aircraft. The student will check the scheduling clipboard to determine which aircraft is assigned for the flight and complete the information on the Aircraft Sign Out Sheet, the Plastic Flight Plan form and the Aircraft Information Sheet in the aircraft checklist binder. A flight plan will be filed with an automated Flight Service Station for all cross country flights. Aircraft keys are kept in a lock box in the dispatch area and will be issued upon completion of the above procedures.

STARTING PROCEDURES - All aircraft will be started within the ramp area of the Department of Aviation unless otherwise designated by the Chief Flight Instructor or his designee. All starting procedures will comply with the procedures stated in the Pilots Operating Handbook for that aircraft.

TAXIING PROCEDURES - Taxi on yellow depicted taxi routes and at a slow and reasonable speed (use 10 miles per hour as a guide). Spacing between aircraft on taxi routes will be a minimum of two ship lengths. During the day, operate the anti-collision lights while taxiing. Use position lights and the landing light at night. To minimize the chance of runway incursion, read back taxi instructions, particularly hold short, position and hold, runway crossing and takeoff clearances. When obtaining complex taxi clearances at unfamiliar airports write down the clearance, have an airport diagram available and request progressive taxi if needed.

LANDINGS - All landings in multi-engine aircraft will be to a full stop. Takeoffs after a full stop landing will be accomplished by taxiing the aircraft back to the beginning of the runway.

FIRE PRECAUTIONS - During fueling operations the aircraft involved will be unoccupied. Fire extinguishers will be present when fueling is in progress. In the event of aircraft fire during engine start or taxiing, follow the emergency procedures in the aircraft POH. If there is any doubt about whether emergency procedures are working to extinguish the fire, evacuate the aircraft immediately.

REDISPATCH PROCEDURES – Given that all flight lessons have an instructor on board, in the event of a diversion and landing at an unscheduled destination, the instructor may continue the lesson without notification to the aviation department. The instructor will notify the aviation department at 405-325-7231 (Long Distance in-state toll free 1-800-522-0772, ext 7231) or the OU mobile phone 405-919-6319, if the unscheduled stop will delay the return of the aircraft to the point of impacting the flight schedule.

AIRCRAFT DISCREPANCIES: Upon noticing a discrepancy the pilot in command will take the following actions:
- Place the plastic "Maintenance Required" sign in the windshield of the aircraft (this sign is in a loose leaf binder in the aircraft).
- Complete Form OUAVMAIN #2 (copies of this form are in a loose leaf binder in the aircraft). When filling out the "Maintenance Problem" section, be as specific as possible. Provide the top copy to the mechanics in the hangar and place the yellow copy on the Aircraft Sign Out Sheet. If the mechanics are not available, place the top copy of the form in the maintenance in-box in the dispatch section. If the main office is closed, put both copies of the form in the envelope slot in the hangar door.
- Upon returning to the dispatch area, turn the plastic flight plan over so that the words "No Fly" are displayed.
  Note: If the main office is locked and this can't be done, the "Maintenance Required" sign in the aircraft serves as notification that the aircraft is not airworthy.
- Notify the director, the chief flight instructor or one of the assistant chief flight instructors as soon as possible.
DEPARTMENT OF AVIATION
ADDITIONAL FLIGHT INSTRUCTOR RATING COURSE –
MULTI-ENGINE AIRPLANE
RULES OF OPERATION

APPROVAL FOR RETURN OF AIRCRAFT TO SERVICE: The mechanics will take whatever corrective actions are required to return the aircraft to service. Upon returning the aircraft to service the mechanics will place the "Maintenance Required" sign back in the lose leaf notebook and notify the main office. At that time the plastic flight plan will be turned back over and the yellow copy of OUAVMAIN #2 placed in the mechanics in-box. If the discrepancy can't be corrected immediately, but the mechanics determine the aircraft is still airworthy, this information will be noted in the "Maintenance Performed" section along with any required operating limitations due to the discrepancy. Inoperative equipment will be removed or deactivated and placarded IAW 14 CFR, Section 91.213. The aircraft may then be returned to service and flown within any operating limitations noted.

SECURING AIRCRAFT - The pilot in command is responsible for securing aircraft on the ramp. Only aviation department personnel and contract personnel from the FBO may hangar aircraft. Students may assist in hangaring aircraft under the supervision of these personnel. All university aircraft will be secured with tie-down ropes or chocks while unattended on the Department of Aviation ramp. On cross country flights, the pilot in command will make tie-down arrangements with the local FBO for securing the aircraft. At no time will an aircraft be left unattended without it being secured by wheel chocks or tie-down ropes. When returning aircraft to the ramp in front of the terminal, solo students will not park the aircraft in the first row by the fence.

AIRCRAFT AVOIDANCE - No person may operate an aircraft so close to another aircraft as to create a collision hazard either on the ground or in the air. At all times, the Pilot-in-Command will be responsible for, and actively use "See and Avoid" procedures as described in the AIM, Chapter 7, Section 5 and comply with the right of way rules specified in 14 CFR, Section 91.113.

FUEL RESERVES - At no time will a department aircraft depart on a flight without the minimum fuel required by 14 CFR, Section 91.151 for VFR flights or 91.169 for IFR flights. Solo fuel reserves will be one hour remaining after the full stop landing on both local and cross-country flights.

MINIMUM ALTITUDES – Minimum altitudes for training with the exception of landing practice is 600’ AGL or higher if the minimum altitude applicable in 14 CFR, Section 91.119 is higher than 600’ AGL. Minimum altitudes for IFR operations will be in accordance with 14 CFR, Sections 91.175 and 91.177. Minimum altitude for failing an engine and feathering its propeller is 3000’ AGL. At altitudes lower than 3000’ AGL engine failures will be simulated by throttling the engine back to idle. Feathering the propeller will be simulated by establishing zero thrust.

PRACTICE AREAS - The University utilizes several practice areas for flight training. These areas are depicted in Appendix C of this Training Course Outline.
WEATHER MINIMUMS
Training under VFR will be in accordance with the basic VFR weather minimums in 14 CFR, Section 91.155. For IFR operations, minimum weather for landings will be in accordance with 14 CFR, Section 91.175. For takeoffs, the ceiling and visibility will be equal to or greater than the lowest Category B aircraft instrument approach minimums at the departure airport. If prevailing winds dictate a circling procedure, the lowest Category B circling minimums will apply. Determination of the requirement for an alternate airport will be in accordance with 14 CFR, Section 91.169.

WIND LIMITS:
Dual: Maximum 35 knots - Maximum 15 knots gust spread
Crosswind: Crosswind limits will not exceed those specified by the POH for the aircraft to be flown.

AIRCRAFT CHECKLIST/KEY TURN IN: After completing the flight and securing the aircraft, the student will record the hobbs time on the Aircraft Information Sheet and return the aircraft checklists and keys to the dispatch area. Give the keys to a staff member for return to the lock box and complete the information on the Aircraft Sign Out Sheet. Return the syllabus sheet to the instructor for further processing.

ATTENDANCE - TARDINESS:
Students are expected to attend all scheduled ground and flight training lessons. In the event of sickness or accident, call the Aviation Department at 325-7231. Do not make a determination of attendance due to weather. If in doubt, call the Aviation Department. Excessive absences or tardiness, are grounds for removal from the course.
**MEI LESSON TIME ALLOCATION**

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**TOTAL 25.0 HOURS**

* The individual lesson times shown on this table are for instructor/student guidance only, they are not mandatory for a given lesson. However, the total in each category should be attained at the completion of the stage to insure the student will acquire at least the minimum amount of instruction required by FAR Part 141. Lesson 14 is provided for checkride purposes.
Lesson Objective: During this lesson, the student will become acquainted with the training airplane from the right seat. The student will review attitude, power settings and configurations required for the performance of the listed maneuvers and procedures. Training will review both visual reference (VR) and instrument reference (IR).

CONTENT:
Lesson Introduction
Preflight Preparation
  - Certificates and Documents
  - Obtaining Weather Information
Multi-Engine Operations
  - Operation of Airplane Systems
  - Determining Performance and Limitations
Ground Operations
  - Visual Inspection
  - Cockpit Management
  - Engine Starting
  - Taxiing: Normal, Crosswind
  - Pre-takeoff Check
Airport and Runway Markings and Lighting
Normal Takeoffs and Climbs
Traffic Pattern Operations
Radio Communications and ATC Light Signals
Visual Scanning and Collision Avoidance
Straight and Level Flight (VR-IR)
Level Turns (VR-IR)
  - Straight
  - Turning
Descents (VR-IR)
  - Straight
  - Turning
Slow Flight
Stalls
  - Power On
  - Power Off
  - Accelerated
Steep Turns
Drag Changes for Various Configurations
Normal Approach and Landings
After Landing Procedures

Completion Standards: At the completion of this lesson, the student will be able to perform all the listed ground procedures from the right seat without assistance. During takeoff and landings, the student will demonstrate good directional control and maintain lift-off, climb, approach and touch down speeds within 10 knots of the correct speed. Straight and level flight, climbs and descents will be performed while maintaining airspeed within 10 knots, roll outs from turns within 15 degrees of assigned headings and specific altitudes within 150’. In addition, the student will be able to demonstrate the correct flight procedure for maneuvering during slow flight, steep power turns, and correct entry and recovery procedures for stalls from the right seat. All maneuvers at critically slow airspeed must be completed no lower than 3500’ AGL.
FLIGHT LESSON 2 DUAL–LOCAL

Lesson Objective: During this lesson, the student will continue to learn how to do multi-engine procedures from the right seat. The student will perform crosswind and maximum performance takeoff and climbs, crosswind and maximum performance approach and landings, and go-arounds from rejected (balked) landings. The student will practice single engine procedures and maneuvers. The student will demonstrate engine inoperative loss of directional control and the recovery technique.

CONTENT:
Lesson Review
Preflight Preparation
Normal Takeoff
Slow Flight

Lesson Introduction
Taxiing with Crosswind and the Use of Differential Power
Crosswind Takeoff and Climb
Ground Reference Manuevers; Including Rectangular Patterns,
S-Turns, and Turns About a Point
Crosswind Approach and Landing
Maximum Performance Takeoff and Climb
Maximum Performance Approach and Landing
Go-Around From Rejected (Balked) Landing
Emergency Operations (Engine-Out)
Flight Principles - Engine Inoperative
Identification of Inoperative Engine
Use of Controls to Counteract Yaw and Roll
Procedures for Shutdown and Feathering
Emergency Descent
Maneuvering With One Engine Inoperative
Straight-and-Level Flight
Turns in Both Directions
Climbs and Descents to Assigned Altitudes
Demonstration of Engine Inoperative Loss of Directional Control
Effects of Various Airspeeds and Configurations During
Engine Inoperative Performance

Completion Standards: At the completion of this lesson, the student will be able to perform all the maneuvers listed in this lesson. The student will be able to identify the inoperative engine and use the correct control inputs to maintain straight flight. The student will have a complete and accurate knowledge of the cause, effect, and significance of engine-out minimum control speed (Vmc) and recognize the imminent loss of control. All engine inoperative loss of directional control demonstrations must be completed no lower than 3500 feet AGL.
FLIGHT LESSON 3 DUAL–LOCAL

LESSON OBJECTIVE: During this lesson, the student will be introduced to engine failure on takeoff, initial climb, enroute, and approaches, and landings with an inoperative engine from the right seat. The student will learn shutdown, restart procedures, and the procedures for engine inoperative loss of directional control and proper recovery. The student will be introduced to and learn emergency operation of airplane systems and flight by reference to instruments.

CONTENT:
Lesson Review
Maximum Performance Takeoff and Climb
Emergency Operations
Maneuvering With One Engine Inoperative

Lesson Introduction
Flight by Reference to Instruments; Including Unusual Flight Attitudes, Radio Aids and Radar Services.
Emergency Operations (Engine-Out)
   Engine Failure on Takeoff Before Vr
   Engine Failure After Liftoff
   Engine Failure Enroute
   Approach and Landing With Inoperative Engine
   Student Demonstration of Engine Inoperative Loss of Directional Control
   Full Feather and In-flight Restart
   Systems and Equipment Malfunctions

Completion Standards:
At the completion of this lesson, the student will be able to maneuver the airplane during level flight with one engine inoperative, while maintaining altitude within 100' and heading within 15°. During engine-out climbs, the airspeed will be maintained within 5 knots of that recommended by the manufacturer. During simulated engine failures, the student will be able to properly identify the inoperative engine and demonstrate the correct shutdown and feathering procedures. The student will demonstrate the correct procedure for engine failure on takeoff before Vr and after liftoff. Engine-out approaches and landings will be performed while maintaining airspeed during final approach within 10 knots but never below the correct approach speed. All this will be done from the right seat.
FLIGHT LESSON 4 DUAL–LOCAL

Lesson Objective: During this lesson, the student will be introduced to and learn multi-engine maneuvers and procedures for Holding Procedures as well as precision and non-precision approaches.

CONTENT:
Lesson Introduction
Normal Operations
Climbs (IR)
Descents (IR)
Holding (IR)
Precision Approaches (IR)
Non-Precision Approaches (IR)
Circling Approaches
Missed Approaches

Completion Standards: At the completion of this lesson, the student will demonstrate the ability to perform each of the listed maneuvers and procedures at a proficiency level that meets or exceeds those criteria outlines in the multi-engine sections of the current FAA Commercial Practical Test Standards and Instrument Rating Practical Test Standards.

UNIVERSITY OF OKLAHOMA

STUDENT NAME _______________________________ ID# _________________
INSTRUCTOR NAME ____________________________ CERT# ______________
AIRCRAFT # CRM FLIGHT STAGE # MEI LESSON # 4
SAT ____% UNSAT ____% INCOMPLETE ____% CANCELLATION____

HOMEWORK COMPLETE: Y / N (% grade is normally part of the lesson grade.)
Note:
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.

REMARKS: ______________________

FOR I OR U: SUBJECTS THAT ARE NOT COMPLETE/INSTRUCTOR COMMENTS

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FOR XC FLIGHTS, LIST DESTINATIONS: _________________________________

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TOTAL ___________ PROCESSED ON __________

HOBBS: IN _______________ REMARKS: ______________________
OUT _______________ ______________________
TOTAL ___________ ______________________

STUDENT SIGNATURE ________________________________________________
INSTRUCTOR SIGNATURE ____________________________________________
FLIGHT LESSON 5 DUAL–LOCAL

Lesson Objective: During this lesson, the student will be introduced to and learn engine out maneuvers and procedures and precision and non-precision approaches.

Lesson Review
Climbs (IR)
Descents (IR)

Lesson Introduction
Emergency Operations (Engine-Out)
   Identification of Inoperative Engine (IR)
   Procedures for Shutdown and Feathering (IR)
   Engine Failure During Straight-and-Level (IR)
   Engine Failure During Turns (IR)
Climbs (IR)
Descents (IR)
Precision Approaches (IR)
Non-Precision Approaches (IR)
Circling Approaches
Missed Approaches

Completion Standards: At the completion of this lesson, the student will demonstrate the ability to perform each of the listed maneuvers and procedures at a proficiency level that meets or exceeds those criteria outlined in the multi-engine sections of the current FAA Commercial Practical Test Standards and Instrument Rating Practical Test Standards.
FLIGHT LESSON 6 DUAL–LOCAL

LESSON OBJECTIVE: During this lesson, the student will work on correcting any deficiencies in previous maneuvers. The instructor will determine that the student is proficient in all maneuvers performed from the right seat.

CONTENT:
- Multi-Engine Operations as Outlined in the FAA Commercial Practical Test Standard
- Multi-Engine Operations
- Ground Operations
- Traffic Pattern Operations
- Visual Scanning and Collision Avoidance
- Straight-and-Level Flight (VR-IR)
- Turns (VR-IR)
- Climbs (VR-IR)
- Descents (VR-IR)
- Flight at Critically Slow Airspeeds
- Approaches and Landings
- Instrument Approach - All Engines Operating
- Instrument Approach - One Engine Inoperative
- Emergency Operations (Engine-Out)
- Systems and Equipment Malfunction
- After Landing Procedures

Completion Standards:
At the completion of this lesson, the student will be able to demonstrate each of the listed areas of operations at a proficiency level that meets or exceeds those criteria outlined in the multi-engine section of the current FAA Commercial Practical Test Standards and Instrument Rating Practical Test Standards.
FLIGHT LESSON 7 DUAL–STAGE CHECK

Lesson Objective: This lesson will be a multi-engine proficiency review conducted by the Chief Instructor or designated assistant, for the purpose of determining the student's knowledge of multi-engine procedures and capability to properly execute those procedures from the flight instructor's position in the aircraft.

Lesson Review:
Systems and Equipment Malfunction
After Landing Procedures
Multi-Engine IFR Operations Both Single and Multi-Engine Flight Instructor Practical Test Standards
Takoffs
  Normal/Crosswind
  Short Field
Engine Failure
  Takeoff Roll (Prior to Vmc)
  Climb
  Enroute
  Landing
Maneuvering With One Engine Inoperative
  Steep Turns
  Slow Flight
  Stalls
    Power On
    Power Off
    Accelerated
Vmc Demonstration
Demonstrating Effects of Various Airspeeds and Configurations During Engine Inoperative Performance
Emergency Descent

Completion Standards: At the completion of this lesson the student will have demonstrated multi-engine proficiency while flying from the instructor's position. All maneuvers will be performed at the level prescribed by the Commercial Pilot Practical Test Standards for Airplane, Multi-Engine Land.

UNIVERSITY OF OKLAHOMA

STUDENT NAME _______________________________ ID# __________________

INSTRUCTOR NAME ____________________________ CERT# ______________

AIRCRAFT # _CRM_ FLIGHT _STAGE # _MEI_ LESSON # _7C_

SAT ____%  UNSAT ____%  INCOMPLETE ____%  CANCELLATION_____

HOMEWORK COMPLETE: Y / N  (% grade is normally part of the lesson grade.)

Note:
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.

REMARKS: ________________________________

FOR I OR U: SUBJECTS THAT ARE NOT COMPLETE/INSTRUCTOR COMMENTS

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FOR XC FLIGHTS, LIST DESTINATIONS: _________________________________

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DATE: __________________

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TOTAL ________________ PROCESSED ON __________

HOBBBS: IN ________________ REMARKS: ________________

OUT ________________

TOTAL ________________

STUDENT SIGNATURE ____________________________________________

INSTRUCTOR SIGNATURE _______________________________________
FLIGHT LESSON 8 DUAL–LOCAL

LESSON OBJECTIVE: During this lesson, the student will begin to teach basic flight operations in a multi-engine airplane. The student will teach attitude, power setting, and configurations required for performance of the listed maneuvers. The student will also prepare and use lesson plans to aid in the teaching process.

CONTENT:
Preflight Preparation
- Certificates and Documents
- Obtaining Weather Information
Multi-Engine Operations
- Operation of Airplane Systems
- Determining Performance and Limitations
Ground Operations
- Visual Inspection
- Cockpit Management
- Engine Starting
- Taxiing
- Pre-Takeoff Check
Airport and Runway Markings and Lightings
Normal Takeoffs and Climbs
Traffic Pattern Operations
Radio Communication and ATC Light Signals
Visual Scanning and Collision Avoidance
Straight-and-Level Flight (VR-IR)
Level Turns (VR-IR)
- Straight
- Turning
Descents (VR-IR)
- Straight
- Turning
Flight at Critically Slow Airspeeds
- Maneuvering During Slow Flight
- Stalls - Gear Up and Flaps Up
- Stalls - Gear Down and Approach Flaps
- Stalls - Gear Down and Full Flaps
- Steep Turns
Drag Changes for Various Configurations
Normal Approach and Landings
After Landing Procedures
Lesson Planning
- Preflight/Ground Operations
- Aircraft Systems

Completion Standards:
At the completion of this lesson, the student will be able to demonstrate all of the listed maneuvers while using instructional techniques and explaining the key elements of the maneuvers. The student should maintain heading, altitude, and airspeed for each maneuver within the limits set by the current FAA Multi-Engine and Flight Instructor Practical Test Standards.
FLIGHT LESSON 9 DUAL–LOCAL

Lesson Objective: During this lesson, the student will continue working on instructional technique by explaining the maneuvers clearly and concisely while flying. The student will introduce and explain crosswind and maximum performance takeoffs and landings, go-arounds, engine-out procedures including Vmc demo.

CONTENT:
Lesson Review
Preflight Preparation
Normal Takeoff
Slow Flight

Lesson Introduction
Taxiing With Crosswind and Use of Differential Power
Crosswind Takeoff and Climb
Ground Reference Maneuvers; Including Rectangular Patterns,
S-Turns, and Turns About A Point
Crosswind Approach and Landing
Maximum Performance Takeoff and Climb
Maximum Performance Approach and Landing
Go-Around From Rejected (Balked) Landing
Emergency Operations (Engine-Out)

Emergency Descent
Maneuvering With One Engine Inoperative
Straight-and-Level Flight
Turns in Both Directions
Climbs and Descents to Assigned Altitudes
Demonstration of Engine Inoperative Loss of Directional Control
Effects of Various Airspeeds and Configurations During Engine Inoperative Performance
Lesson Planning
Ground Reference Maneuvers
Engine-Out Procedures
Demonstration of Engine Inoperative Loss of Direction Control

Completion Standards: The student's ability to instruct while flying the aircraft should improve. The student should be clear and concise in his/her explanation of the maneuver. The maneuvers should be flown smoothly and within the limits set by the current FAA Multi-Engine and Flight Instructor Practical Test Standards.
FLIGHT LESSON 10 DUAL–LOCAL

LESSON OBJECTIVE: During this lesson, the student will teach engine failure on takeoff, initial climb, Enroute, and approaches and landings with an inoperative engine. The student will teach shutdown and restart procedures and review procedures for engine inoperative loss of directional control and recovery. Also, the student will teach emergency operation of airplane systems.

CONTENT:
Lesson Review
Maximum Performance Takeoff and Climb
Emergency Operations
Maneuvering With One Engine Inoperative

Lesson Introduction
Flight by Reference to Instruments; Including Unusual Flight Attitudes, Radio Aids, and Radar Services
Emergency Operations (Engine-Out)
- Engine Failure on Takeoff Before Vr
- Engine Failure After Liftoff
- Engine Failure Enroute
- Approach and Landing with Inoperative Engine
- Engine Inoperative Loss of Directional Control
- Full Feather and In-flight Restart
- Systems and Equipment Malfunctions

Completion Standards:
At the completion of this lesson, the student will be able to teach and demonstrate all of the listed maneuvers. The student should maintain heading, altitude and airspeed within the limits set by the current FAA Multi-Engine and Flight Instructor Practical Test Standards.
FLIGHT LESSON 11 DUAL–LOCAL

Lesson Objective: During this lesson, the student will teach multi-engine maneuvers and procedures holding as well as precision and non-precision approaches.

CONTENT:
Lesson Introduction
Normal Operations
  Climbs (IR)
  Descent (IR)
  Holdings (IR)
  Precision Approaches (IR)
  Non-Precision Approaches (IR)
  Circling Approaches
  Missed Approaches
Prepared Lesson Plans
  Normal Instrument Procedure

Completion Standards: At the completion of this lesson, the student will demonstrate the ability to teach each of the maneuvers and procedures that meets or exceeds those criteria outlined in the multi-engine sections of the Multi-Engine and Flight Instructor Practical Test Standards.
FLIGHT LESSON 12 DUAL–LOCAL

Lesson Objective: During this lesson, the student will teach engine-out maneuvers and for precision and non-precision approaches.

CONTENT:
Lesson Review
Climbs (IR)
Descents (IR)

Lesson Introduction
Emergency Operations (Engine-Out)
   Identification of Inoperative Engine (IR)
   Procedures for shutdown and Feathering (IR)
   Engine Failure During Straight-and-Level (IR)
   Engine Failure During Turns (IR)
   Climbs (IR)
   Descents (IR)
   Precision Approaches (IR)
   Non-Precision Approaches
   Circling Approaches
   Missed Approaches

Completion Standards: At the completion of the lesson, the student will be able to teach and demonstrate all of the listed maneuvers. The student should maintain altitude, heading, and airspeed for each maneuver within the limits set by the Multi-Engine and Flight Instructor Practical Test Standards.

UNIVERSITY OF OKLAHOMA

STUDENT NAME ____________________________ ID# _______________
INSTRUCTOR NAME __________________________ CERT# ______________
AIRCRAFT # CRM FLIGHT STAGE # MEI LESSON # 12
SAT ____% UNSAT ____% INCOMPLETE ____% CANCELLATION ______

HOMEWORK COMPLETE: Y / N (% grade is normally part of the lesson grade.)
Note:
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.

REMARKS: ______________________________________________________

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      OUT ____________  SYLL. LESSON __________
      TOTAL __________  PROCESSED ON __________

HOBBS: IN ______________  REMARKS: ______________
      OUT ____________
      TOTAL __________

STUDENT SIGNATURE _____________________________________________
INSTRUCTOR SIGNATURE _________________________________________
FLIGHT LESSON 13 DUAL–LOCAL

LESSON OBJECTIVE: During this lesson, the student will review procedures and instruction techniques for any previous maneuver the instructor deems necessary. This lesson will be used to ensure that any weak areas the student has are addressed.

CONTENT:
Lesson Review
Multi-Engine Operations as outlined in the FAA Multi-Engine Flight Instructor Practical Test Standards.
Multi-Engine Operations
Ground Operations
Traffic Pattern Operations
Visual Scanning and collision Avoidance
Straight-and-Level Flight (VR-IR)
Turns (VR-IR)
Climbs (VR-IR)
Descents (VR-IR)
Maneuvering During Slow Flight
Approaches and Landings - All Engines Operating
Approaches and Landings - One Engine Inoperative
Instrument Approach - All Engines Operating
Instrument Approach - One Engine Operating
Emergency Operations (Engine Out)
Systems and Equipment Malfunction
After Landing Procedures

Completion Standards:
At the completion of this lesson, the student will be able to teach and demonstrate within the limits set by the current FAA Multi-Engine and Flight Instructor Practical Test Standards.

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UNIVERSITY OF OKLAHOMA

STUDENT NAME _______________________________ ID# _________________
INSTRUCTOR NAME ____________________________ CERT# ______________

AIRCRAFT #: CRM FLIGHT STAGE #: MEI LESSON #: 13

SAT ____% UNSAT ____% INCOMPLETE ____% CANCELLATION_____

HOMEWORK COMPLETE: Y / N (% grade is normally part of the lesson grade.)
Note:
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.

REMARKS: ________________________________

FOR I OR U: SUBJECTS THAT ARE NOT COMPLETE/INSTRUCTOR COMMENTS

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FOR XC FLIGHTS, LIST DESTINATIONS: _________________________________

DATE: __________________
TIME: IN ________________ ENTERED BY ________________
OUT ________________ SYLL. LESSON ________________
TOTAL ________ PROCESSED ON ________________

HOBBS: IN ________________ REMARKS: __________________
OUT ________________
TOTAL __________________________

STUDENT SIGNATURE ____________________________________________
INSTRUCTOR SIGNATURE _______________________________________

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FLIGHT LESSON 14 DUAL—FINAL STAGE CHECK

Lesson Objective: This lesson is a stage check conducted by the Chief Flight Instructor or Assistant Chief Flight Instructor. The student must demonstrate flight instructor proficiency. Note: Several areas indicate a minimum number of tasks which must be evaluated. The student must be prepared to demonstrate proficiency in all the listed tasks.

CONTENT:
Preflight Procedures (A minimum of one of the following)
  - Preflight Inspection
  - Single-Pilot Resource Management
  - Engine Starting

Takeoffs, Landings and Go-Arounds (At least two takeoff tasks and two landing tasks from the following)
  - Normal and Crosswind Takeoff and Climb
  - Short-Field Takeoff and Maximum Performance Climb
  - Normal and Crosswind Approach and Landing
  - Go-Around/Rejected Landing
  - Short-Field Approach and Landing

Performance Maneuver – Steep Turns

Slow Flight and Stalls (At least one of the following)
  - Maneuvering During Slow Flight
  - Power-On Stalls
  - Power-Off Stalls
  - Accelerated Maneuver Stalls (Demonstration)

Emergency Operations (At least the second or third, the forth and one other of the following)
  - Systems and Equipment Malfunctions
  - Engine Failure During Takeoff Before Vmc
  - Engine Failure After Liftoff
  - Approach and Landing With an Inoperative Engine
  - Emergency Descent
  - Emergency Equipment and Survival Gear

Multi-Engine Operations (At least the forth and fifth an one other of the following)
  - Operation of Systems
  - Performance and Limitations
  - Flight Principles – Engine Inoperative
  - Maneuvering With One Engine Inoperative
  - Vmc Demonstration
  - Demonstrating The Effects Of Various Airspeeds and Configurations During Engine Inoperative Performance

Completion Standards: The student will demonstrate proficiency in strict accordance with the current FAA Airplane Multi-Engine Flight Instructor Practical Test Standards. This stage check will be at least equal in scope, depth and difficulty to that practical test.
STAGE OBJECTIVE

During this course the student will review and reinforce his knowledge of aerodynamics, aircraft systems, aircraft performance, emergency procedures, flight maneuvers and operations, and instrument flight as they apply to multi-engine aircraft. The student will also develop the instructional knowledge of these subject areas necessary for the Multi-engine Flight Instructor Certificate.

COMPLETION STANDARD

This course is complete when the student has taken the multi-engine instructor course final exam with a minimum passing score of 70%, and the instructor has reviewed each incorrect response to ensure complete understanding of the material.
## GROUND LESSON TIME ALLOCATION

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* The individual lesson times shown on this table are for instructor/student guidance only, they are not mandatory for a given lesson. However, at the completion of the course the total ground instruction provided will be at least 20 hours.
GROUND LESSON 1 – 3.0 HOURS

Lesson Objective: The student will review basic and advanced aircraft systems as well as their associated emergency procedures as they apply to multi-engine aircraft and will develop instructional knowledge of these areas.

Content:
- Powerplant
- Propeller Systems
- Fuel System
- Fuel Injection Systems
- Turbocharging/Supercharging
- Electrical Systems
- Hydraulic Systems
- Landing Gear Systems
- De-Icing/Anti-Icing Systems
- Cabin Heat Systems
- Pressurization Systems
- Minimum Equipment List

Basic Emergency Procedures
- Pilots Operating Handbook
- Forced Landing
- Hydraulic System Failures
- Electrical System Failures
- Landing Gear Malfunctions
- Communication/Navigation Systems Failure
- In-flight Fire
- Lost Procedures

Completion Standards:
The student will demonstrate through oral discussion, practical demonstration, or quizzing the knowledge and understanding required to effectively teach multi-engine aircraft systems and emergency procedures.

UNIVERSITY OF OKLAHOMA
STUDENT NAME _______________________________ ID# _________________
INSTRUCTOR NAME ____________________________ CERT# ______________
AIRCRAFT # GROUND STAGE # MEI LESSON # 1
SAT ____% UNSAT ____% INCOMPLETE ____% CANCELLATION____

HOMEWORK COMPLETE: Y / N (% grade is normally part of the lesson grade.)
Note:
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.

REMARKS: __________________________________________________________

FOR I OR U: SUBJECTS THAT ARE NOT COMPLETE/INSTRUCTOR COMMENTS

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FOR XC FLIGHTS, LIST DESTINATIONS: _________________________________

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OUT ________________ SYLL. LESSON ____________
TOTAL ________________ PROCESSED ON ____________

HOBBS: IN ________________ REMARKS: ________________
OUT ________________
TOTAL ________________

STUDENT SIGNATURE ____________________________
INSTRUCTOR SIGNATURE ____________________________
GROUND LESSON 2 – 2.0 HOURS


Lesson Objective: The student will review aircraft performance considerations as they apply to multi-engine aircraft and will develop instructional knowledge of these areas.

Content:
- Multi-Engine V-speeds
- Service Ceilings
- Weight and Balance Effects
- Weight and Balance Computations
- Performance Factors
- Takeoff Charts
- Accelerate/Stop Distance
- Climb Rate Charts
- Cruise Performance Charts
- Landing Distance Charts
- Stall Speed Charts
- Power/Performance Charts

Completion Standards:
The student will demonstrate through oral discussion, practical demonstration, or quizzing the knowledge and understanding required to effectively teach multi-engine performance considerations.

STUDENT NAME ___________________________ ID# ________________

INSTRUCTOR NAME ___________________________ CERT# ________________

AIRCRAFT # __________________ GROUND STAGE # ________________ MEI ________________ LESSON # ________________

SAT _____ % UNSAT _____ % INCOMPLETE _____ % CANCELLATION _____

HOMEWORK COMPLETE: Y / N (% grade is normally part of the lesson grade.)

Note:
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.

REMARKS: __________________________________________________________

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TOTAL ________________

STUDENT SIGNATURE _______________________________________

INSTRUCTOR SIGNATURE ____________________________________
GROUND LESSON 3 – 3.0 HOURS


Lesson Objective: The student will review basic and advanced aerodynamics as they apply to multi-engine aircraft and will develop instructional knowledge of these areas.

Content:  
- Thrust Vectors/Induced Airflow  
- Turning Tendencies  
- Critical Engine  
- Minimum Control Speed (VMC)  
- Stability  
- Effects of Weight  
- Inflight Forces (Single-engine)  
- Control Application

Completion Standards:  
The student will demonstrate through oral discussion, practical demonstration, or quizzing the knowledge and understanding required to effectively teach the aerodynamics of multi-engine flight.

STUDENT NAME ___________________________ ID# _________________  
INSTRUCTOR NAME ___________________________ CERT# ______________

AIRCRAFT # GROUND STAGE # MEI LESSON # 3

SAT ____% UNSAT ____% INCOMPLETE ____% CANCELLATION_____

HOMEWORK COMPLETE: Y / N (% grade is normally part of the lesson grade.)

Note:
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.

REMARKS: ______________________
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HOBBYS: IN ________________ REMARKS: ________________
        OUT ________________
        TOTAL _____________

STUDENT SIGNATURE _______________________________________
INSTRUCTOR SIGNATURE _____________________________________
GROUND LESSON 4 – 2.0 HOURS

Intermediate Exam

Completion Standards:
The student will complete the Intermediate Exam with a minimum passing score of 70%, and the instructor will review each incorrect response to ensure complete understanding of the material.

UNIVERSITY OF OKLAHOMA

STUDENT NAME ___________________________ ID# __________________

INSTRUCTOR NAME ___________________________ CERT# _______________

AIRCRAFT #  GROUND  STAGE #  MEI  LESSON #  4

SAT _____ %  UNSAT _____ %  INCOMPLETE ____ %  CANCELLATION _______

HOMEWORK COMPLETE: Y / N  (% grade is normally part of the lesson grade.)

Note:
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.

REMARKS: __________________________________________________________

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STUDENT SIGNATURE _____________________________________________

INSTRUCTOR SIGNATURE _________________________________________
GROUND LESSON 5 – 2.0 HOURS

Text Reference: 14 CFR, Section 61, Subpart H “Flight Instructors”
Commercial Pilot Practical Test Standards, “For Airplane Single- and Multi-Engine Land and Sea”
Private Pilot Practical Test Standards “For Airplane Multi-Engine Land and Sea”
Flight Instructor Practical Test Standards “For Airplane Multi-Engine Land and Sea”

Lesson Objective: The student will understand the regulatory requirements for providing multi-engine flight instruction, determining Areas of Operation (AO’s) that must be evaluated when a multi-engine rating is added to an existing pilot certificate, safety considerations for actual and simulated engine failures and single engine maneuvers and requirements for satisfactory performance for each AO.

Content:
- Regulatory requirements to provide instruction
- Determining AO’s that must be evaluated for multi add on to an existing pilot certificate
- Requirements for satisfactory performance for each AO
- Safety Considerations (emphasis on altitudes and airspeeds at which the following maneuvers are conducted)
  -- Simulated engine failure during takeoff
  -- Simulated engine failure after liftoff
  -- Maneuvering with one engine inoperative
  -- Slow flight and stalls
  -- V \(_{MC}\) Demonstration
  -- Engine failure during flight
  -- Instrument and visual approach-one engine inoperative

Completion Standards:
The student will demonstrate through oral discussion, practical demonstration, or quizzing the knowledge and understanding of multi-engine regulatory and practical instruction considerations.

UNIVERSITY OF OKLAHOMA

STUDENT NAME _______________________________ ID# ____________
INSTRUCTOR NAME ____________________________ CERT# ____________
AIRCRAFT # GROUND STAGE # MEI LESSON # 5
SAT ____% UNSAT ____% INCOMPLETE ____% CANCELLATION ________

HOMEWORK COMPLETE: Y / N (% grade is normally part of the lesson grade.)
Note:
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.
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HOBBS: IN _______________ REMARKS: __________________
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STUDENT SIGNATURE ____________________________________________
INSTRUCTOR SIGNATURE _________________________________________
GROUND LESSON 6 – 3.0 HOURS

Text Reference: Multi-Engine Manual, Jeppesen Sanderson, Chapter 4, "Performing Maneuvers and Procedures"

Lesson Objective: The student will review normal operations and maneuvers for multi-engine aircraft and will develop instructional knowledge of these areas.

Content:
- Normal Preflight Inspection
- Normal Takeoff and Landing -- Ground Operations
- Maximum Performance Takeoff and Landing
- Go-around
- Steep Power Turns
- Maneuvering During Slow Flight
- Stalls
- Private and Commercial Flight Maneuvers
- Emergency Operations
- Spin Recognition and Recovery

Completion Standards:
The student will demonstrate through oral discussion, practical demonstration, or quizzing the knowledge and understanding required to effectively teach normal operations and maneuvers for multi-engine aircraft.

STUDENT NAME ______________________ ID# ______________
INSTRUCTOR NAME ______________________ CERT# __________
AIRCRAFT # GROUND STAGE # MEI LESSON # 6
SAT ___% UNSAT ___% INCOMPLETE ___% CANCELLATION _____

HOMEWORK COMPLETE: Y / N (% grade is normally part of the lesson grade.)
Note: 
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.
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STUDENT SIGNATURE ________________________________________________
INSTRUCTOR SIGNATURE _____________________________________________
GROUND LESSON 7 – 3.0 HOURS


Lesson Objective: The student will review general engine failure procedures, engine-out maneuvers, and instrument flight procedures as applied to multi-engine aircraft and will develop instructional knowledge of these subject areas.

Content:
- Engine Failure
- Engine Shutdown/Restart
- Propeller Feathering/Unfeathering
- Takeoff and Landing
- Climb and Enroute
- VMC Demonstration
- Drag Demonstration
- Spin Recognition and Recovery
- Aircraft Control
- Cockpit Management
- IFR Planning
- Instrument Approaches
- Engine Failure En route
- Engine Failure -- Straight and Level/Turns
- Instrument Approach With One Engine Inoperative

Completion Standards:
The student will demonstrate through oral discussion, practical demonstration, or quizzing the knowledge and understanding required to effectively teach general engine failure procedures, engine-out maneuvers, and instrument flight procedures in multi-engine aircraft.

UNIVERSITY OF OKLAHOMA

STUDENT NAME _______________________________ ID# __________________
INSTRUCTOR NAME ___________________________ CERT# __________________
AIRCRAFT # GROUND STAGE # MEI LESSON # 7
SAT ____% UNSAT ____% INCOMPLETE ____% CANCELLATION ______

HOMEWORK COMPLETE: Y / N (% grade is normally part of the lesson grade.)
Note:
1. Circle appropriate status/grade and put number (%) grade on line.
2. If cancellation state reason.

REMARKS: __________________________________________________________
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      TOTAL __________ PROCESSED ON __________

HOBBS: IN ____________ REMARKS: ______________
       OUT ____________
       TOTAL __________

STUDENT SIGNATURE ________________________________________________
INSTRUCTOR SIGNATURE _____________________________________________
GROUND LESSON 8 – 2.0 HOURS

Final Exam

Completion Standards:
The student will complete the Final Exam with a minimum passing score of 70%, and the instructor will review each incorrect response to ensure complete understanding of the material.
APPENDIX B
UNIVERSITY OF OKLAHOMA
COURSE POLICIES

1. At the discretion of the instructor, students who progress rapidly within a specific stage, may within reasonable variances, continue to the next lesson with less time than is specified in the specific lesson curriculum, provided all content and completion standards are satisfactorily completed. The time stated in the lesson is the approximate minimum time that a student would need to meet the lesson objectives and completion standards; not absolute required times. The lesson time could be slightly more or slightly less. These reduced hours must be included in other lessons to complete the total ground or flight time specified by category in the training course outline in order to satisfactorily complete the course.

2. At no time will a student be allowed to continue to the next stage without having successfully completed all of the lessons and the required tests or stage checks related to the completion of the previous stage.

3. Flight training for this course will be done in accordance with the F.A.A approved syllabus. Deviations from the syllabus due to student training requirements, weather related factors, or other items as necessary will be allowed as long as the following requirements are met:
   
   a. A notation will be made in the student training record as to the lesson covered and the reason for the deviation.
   
   b. The student will complete all syllabus requirements before a graduation certificate is issued.

4. To satisfactorily complete the course of training, the student must meet all course objectives and completion standards. The student must complete the ground school courses.
APPENDIX C
UNIVERSITY OF OKLAHOMA
PRACTICE AREAS

The University of Oklahoma Department of Aviation has three (3) practice areas used for normal flight training operations on a daily basis. They are designated practice area 'A', 'B', and 'C'.

Practice area 'A' is described as an area southwest of Max Westheimer Airport bounded on the north by State Highway 9, on the south by the 35° line of latitude, on the west by the line extending north and south along a similar direction road extending south from the town of Blanchard, and on the east by the line formed by the railroad tracks running southeast from Norman, OK along and near Interstate Highway 35.

Practice area 'B' is described as an area southeast of Max Westheimer Airport bounded on the north by State Highway 9, on the south by State Highway 33, on the west by the railroad tracks extending southeast from Norman, OK, and on the east by an imaginary line extending south from the east side of Lake Thunderbird and ending at State Highway 33.

Practice area 'C' is described as an area west of Max Westheimer Airport bounded on the north by an imaginary line extending west from State Highway 9 southwest of Norman, OK to the town of Pocasset, OK, on the south by the 35° line of latitude, on the west by the line extending north and south along a similar direction road extending north from the town of Chickasha, OK, and on the east by the line extending north and south along a similar direction road extending south from the town of Blanchard, OK.