NICE AIR

Multi Engine Rating Training Syllabus

Multi-Engine Rating Course Training Syllabus

MULTI-ENGINE PILOT

1. COURSE OBJECTIVES

The applicant will obtain the knowledge, skill, and aeronautical experience necessary to meet the requirements for the addition of an airplane multi-engine land class rating to an existing pilot certificate.

2. COURSE COMPLETION STANDARDS

The applicant will demonstrate through written tests and flight tests, and show through appropriate records that the knowledge, skill, and experience requirements have been obtained for the addition of an airplane Multi-Engine land class rating to an existing pilot certificate.

3. GROUND TRAINING COURSE OBJECTIVES

The applicant will acquire the necessary aeronautical knowledge for an airplane multi-engine land class rating.

4. GROUND TRAINING COURSE COMPLETION STANDARDS

The applicant will demonstrate, through oral and written tests and records, that the necessary aeronautical knowledge has been obtained for an airplane multi-engine land class rating.

5. FLIGHT TRAINING COURSE OBJECTIVES

The applicant will obtain the aeronautical skill and experience necessary to meet the requirements for the addition of an airplane Multi-Engine land class rating to an existing pilot certificate.

6. FLIGHT TRAINING COURSE COMPLETION STANDARDS

The applicant will demonstrate through flight tests and school records that the aeronautical skill and experience necessary to obtain an airplane multi-engine land class rating have been met.

7. COURSE ENROLLMENT

To enroll in the multi-engine rating course, the applicant must hold a valid private or commercial pilot certificate with an airplane category rating and a single-engine land class rating. A pilot must hold a valid third-class medical certificate in order to obtain a multi-engine rating. However, pilots exercising the privileges of a commercial multi-engine rating must hold a valid second-class medical certificate.

8. REQUIREMENTS FOR GRADUATION

To obtain an airplane multi-engine rating limited to VFR only, the applicant must successfully complete all ground and flight lessons in Stages I.
To obtain an airplane multi-engine rating with instrument privileges, the applicant must successfully complete all ground and flight lessons in Stages I and II.
To obtain initial commercial pilot certificate with airplane category multi-engine land class rating, the applicant must successfully complete all ground and flight lessons in Stages I, II and III.

9. 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. The stage objectives and standards are described at the beginning of each stage within the syllabus.

CURRICULUM OVERVIEW

Additional Multi-Engine Class Rating Training Syllabus

	GROUND TRAINING		
	Video, Class Discussion	Briefing/Debriefing	Ground Training Total
SATGE I	4.0	As Required	4.0
STAGE II	2.0	As Required	2.0
STAGE III	2.0	As Required	2.0
TOTALS	8.0	As Required	8.0

	FLIGHT TRAINING								
	DUAL					DUTY OF PIC			
	Day Local	Day Cross Country	Night Local	Night Cross Country	Instrument	Day Local	Night Local	Cross Country	Dual/Solo Combined Total
FLIGHT SATGE I	7.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	7.0
FLIGHT STAGE II	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0
FLIGHT STAGE III	1.0	2.0	0.0	2.0	1.8	1.0	5.0	4.0	15.0
TOTALS	10.0	2.0	0.0	2.0	5.0	1.0	5.0	4.0	24.0

*Note: Flight Stage II is for the pilot who has instrument rating in airplane single engine.

*Note: Flight Stage III is for Initial Commercial Pilot Certification Course only.

*Note: The pilot who doesn't have an instrument rating should complete only Flight Stage I for additional rating.

*Note: The student who is seeking for initial commercial pilot certificate should complete all three stages to meet the flight experience requirements of part 61. 125

LESSON TIME ALLOCATION										
Ground Training						Flight Training				
						Dual				
Commercial pilot maneuvers , discussion, video	Multi Engine manual, class, discussion, video	Pilot briefing	Stage/Final exam	Exam debriefing	GROUND AND FLIGHT TRAINING	Day local	Day cross-country	Night local	Night cross-country	Instrument
	1.0				GL 1-Exploring the ME rating, Human factors and normal operations					
	2.0				GL 2-Aircraft systems, weight and balance and determining the performance					
	1.0				GL 3-Multi-engine aerodynamics and maneuvers/procedures					
					FL 1-Introduction to multi-engine.	1.0				0.2
					FL 2-Slow flight, stalls and steep turn	1.0				0.2
	2.0				GL 4-Engine out aerodynamics and operations					
					FL 3-Introduce single engine operation					0.2
					FL 4-Drag demo and Vmc demo	1.0				0.2
					FL 5-Engine out operations	1.0				0.2
				As req.	FL 6-Normal and crosswind takeoffs and landings	1.0				
					FL 7-Short field takeoffs and landings	1.0				
					FL 8-Single engine landings, aborted takeoffs	1.0				0.2
	2.0				GL 5-Operating on instrument					
					FL 9-Instrument review	1.0				1.0
					FL 10-Single engine instrument approach	1.0				1.0
					FL 11-Night flight			5.0		0.4
					FL 12-Day cross-country		2.0			0.4
					FL 13-Night cross-country				2.0	0.4
					FL 14-Long cross-country		4.0			0.4
					FL 15-Review, Preparation for Practical Test	1.0				0.2
					FAA Practical Test (DPE)	AS Req.				
0.0	8.0	As req.	0.0	As req.	Stage total	10.0	6.0	5.0	2.0	5.0

GROUND LESSON 1 – 1 Hour

Exploring the Multi-Engine Rating

A. LESSON REFERENCES:

MULTI-ENGINE MANUAL

- Chapter 1, Exploring the Multi-Engine
- Rating, and Chapter 4, Performing
- Maneuvers and Procedures, Section A
- Normal Operations

B. RECOMMENDED SEQUENCE:

Lesson Introduction
Class Discussion

C. OBJECTIVES:

- During this lesson, the applicant will become familiar with the training program and applicable regulations.
- The applicant will learn basic human factors concepts as they relate to Multi-Engine operations, including high-altitude physiology.
- The applicant will be introduced to the training airplane and to the procedures relating to normal operations in a multi-engine airplane, including normal and short-field takeoff and landing procedures.

D. CONTENT:

EXPLORING THE MULTI-ENGINE RATING

SEEKING A NEW EXPERIENCE

☐ Why a Multi-Engine Rating?
☐ The Training Path

CONSIDERING HUMAN FACTORS

☐ Human Factors Concepts
☐ Are Two Engines Better Than One?
☐ Human Factors in Multi-Engine Operations
☐ Aviation Physiology in Multi-Engine Airplanes

NORMAL OPERATIONS

☐ Using Checklists
☐ Preflight Inspection (Including the
☐ Minimum Equipment List)
☐ Ground Operations
☐ Starting Engines
☐ Taxiing
☐ Before-Takeoff Check
☐ Takeoff and Climb
☐ Short Field Takeoff and Climb
☐ Cruising and Descent Planning
☐ Approach and Landing
☐ Short Field Approach and Landing
☐ Go-Around

E. COMPLETION STANDARDS:

- During oral quizzing by the instructor, the applicant will demonstrate understanding of the training program and the human factors issues related to multi-engine operations.
- The applicant will exhibit knowledge of normal operating procedures by explaining elements selected by the instructor.
- The applicant will review the Summary Checklists and Key Terms for Chapter 1. Sections A and B, and complete Exercise 4A with a minimum passing score of 80%. The instructor will review each incorrect response to ensure complete understanding before progressing to Ground Lesson 2.

GROUND LESSON 2 – 2:00 Hours

Understanding Your Airplane Pilot's Operating Handbook (POH)

A. REFERENCES:

MULTI-ENGINE MANUAL

- Chapter 2

B. RECOMMENDED SEQUENCE:

- Lesson Introduction
- Class Discussion

C. OBJECTIVES:

- The applicant will become familiar with the equipment and systems of the training airplane and learn how to compute and control the weight and balance.
- The applicant will also learn to accurately determine aircraft performance from multi-engine airplane performance tables, charts, and/or graphs.

D. CONTENT:

EXAMINING SYSTEMS

Multi-Engine Powerplant Systems

- ☐ Fuel Metering Systems
- ☐ Ignition and Starting Systems
- ☐ Lubrication Systems
- ☐ Induction Systems
- ☐ Cooling and Exhaust Systems
- ☐ Engine Indicating Systems

Engine-Driven Power Systems

- ☐ Electrical Generating Systems
- ☐ Pneumatic Power Systems
- ☐ Hydraulic Power Systems

Propeller Systems

- ☐ Constant-Speed Operations
- ☐ Power Control
- ☐ Propeller Synchronizing
- ☐ Feathering
- ☐ Restarting

Multi-Engine Airframe Systems

- ☐ Electrical Distribution
- ☐ Hydraulic Systems
- ☐ Fuel Systems
- ☐ Landing Gear Systems
- ☐ Ice and Rain Control Systems
- ☐ Cabin Environmental Systems

CALCULATING WEIGHT AND BALANCE

- ☐ Weight Considerations
- ☐ Balance Considerations
- ☐ Weight Shifts and the Effect on Balance
- ☐ Differences in Weight and Balance Data for Multi-Engine

DETERMINING PERFORMANCE

- ☐ Performance Definitions
- ☐ The Single-Engine Performance Penalty
- ☐ Using Performance Data
- ☐ V-Speeds
- ☐ Takeoff Performance Calculations
- ☐ Single-Engine Rate of Climb
- ☐ Accelerate-Stop Distance
- ☐ Accelerate-Go Distance
- ☐ Climb
- ☐ Cruise Flight
- ☐ Single-Engine Ceilings
- ☐ Descent
- ☐ Landing Performance Calculations
- ☐ Single-Engine Go-Around

E. COMPLETION STANDARDS:

- The applicant will exhibit knowledge of the systems of the training airplane by explaining the operation of relevant systems.
- The applicant will demonstrate the ability to correctly compute the weight and balance for the training airplane, including the expected performance based on at least two different loading conditions with the airport and environmental conditions as specified by the instructor.
- The applicant will complete Exercises 2A, 2B, and 2C with a minimum passing score of 80%, and the instructor will review each incorrect response to ensure complete understanding before progressing to Ground Lesson 3.

GROUND LESSON 3 – 1:00 Hour

Introducing Multi-Engine Aerodynamics and Maneuvers

A. REFERENCES:
MULTI-ENGINE MANUAL
- Chapter 3, Section A, Chapter 4, Section B

B. RECOMMENDED SEQUENCE:
- Lesson Introduction
- Class Discussion

C. OBJECTIVES:
- During this lesson, the applicant will learn the fundamentals of multi-engine aerodynamics and the elements of the specified multi-engine maneuvers.
- The applicant will also develop stall/spin awareness and a clear understanding of the elements relating to stalls and spins in multi-engine airplanes.

D. CONTENT:
DISCOVERING AERODYNAMICS

MULTI-ENGINE AERODYNAMICS
- ☐ Boundary Layer Effect
- ☐ Induced Flow
- ☐ Turning Tendencies
- ☐ High Speed Flight

PERFORMING MANEUVERS AND PROCEDURES MANEUVERS
- ☐ Steep Turns
- ☐ Slow Flight
- ☐ Stalls (Power-On and Power-Off)
- ☐ Spin Awareness
- ☐ Emergency Descent

E. COMPLETION STANDARDS:
- The applicant will demonstrate knowledge of multi-engine aerodynamics by explaining elements selected by the instructor during oral quizzing.
- The applicant will demonstrate knowledge of the required maneuvers by explaining the elements relating to each maneuver.
- The applicant will demonstrate knowledge of stalls and spins in multi-engine airplanes by explaining the aerodynamic conditions required for a spin, the flight situations and conditions where unintentional spins may occur. The instrument indications during a spin and/or spiral, and the techniques and procedures used to recognize and recover from unintentional spins.
- The applicant will complete Exercises 3A and 4B with a minimum passing score of 80%, and the instructor will review each incorrect response to ensure complete understanding before progressing to Ground Lesson 4.

GROUND LESSON 4 – 2:00 Hours

Single Engine Operations

A. REFERENCES:
MULTI-ENGINE MANUAL
- Chapter 3, Section B, Chapter 5, Section A,B and D
- Pilot's Operating Handbook (POH)

B. RECOMMENDED SEQUENCE:
- Lesson Introduction
- Class Discussion

C. OBJECTIVES:
- During this lesson, the applicant will learn the principles of engine-out aerodynamics and the procedures and maneuvers relating to engine-out operations in multi-engine airplanes.
- The applicant will also become familiar with critical decision-making processes involving flight in multi-engine airplanes.

D.CONTENT:
MASTERING ENGINE-OUT AERODYNAMICS
- ☐ The Story of an Engine Failure
- ☐ The Airplane Yaws and Rolls
- ☐ The Impact of the Critical Engine The Cure for Yaw and Roll
- ☐ The Nature of Vmc
- ☐ The Windmilling Propeller Feathering
- ☐ The Sideslip
- ☐ Consequences of Sideslip
- ☐ Controllability versus Performance
    - Weight
    - Angle of Bank
    - Center of Gravity
    - Power and Configuration

MASTERING ENGINE-OUT OPERATIONS WHEN AN ENGINE FAILS
- ☐ Taking Action
    - Pitch
    - Power
    - Drag
    - Identify
    - Verify
    - Troubleshoot
    - Feathering - (Actual and Simulated Procedures)
    - Engine Shutdown (Actual and Simulated Procedures)
    - Restarting the Engine
    - Securing the Inoperative Engine
    - Monitoring the Operative Engine

ENGINE-OUT MANEUVERS
- ☐ Takeoff and Climb (Loss of Engine Power Before and After Liftoff)
- ☐ Enroute
- ☐ Vmc Demonstration
- ☐ Drag Demonstration
- ☐ Landing
- ☐ Engine-Out Go-Around

DECISION MAKING IN MULTI-ENGINE AIRPLANES
- ☐ The Decision-Making Process
    - PIC Responsibility
    - Communication
    - Resource Use
- ☐ Workload Management Situational Awareness
- ☐ Controlled Flight Into Terrain (CFIT)
- ☐ Poor Judgment Chain

COMPLETION STANDARDS:
- The applicant will demonstrate understanding of multi-engine aerodynamics with an inoperative engine and the concepts and factors of decision making in a multi-engine airplane during oral quizzing by the instructor.
- The applicant will demonstrate the ability to properly accomplish the appropriate checklists, operate the airplane safely during engine-inoperative flight, make appropriate decisions regarding the continuation of flight. and accomplish the required procedures and maneuvers within the limits established by the Practical Test Standards.
- The applicant will complete Exercises 3B 5A, 5B, and 5D with a minimum passing score of 80%, and the instructor will review each incorrect response to ensure complete understanding before the applicant progresses to Ground Lesson 5.

GROUND LESSON 5 – 2:00 Hours

Instrument Flight

A. REFERENCES:
MULTI-ENGINE MANUAL
- Chapter 5, Section C
- Pilot's Operating Handbook

B. RECOMMENDED SEQUENCE
- Lesson Introduction
- Presentation
- Class Discussion

C. OBJECTIVES:
- During this lesson, the applicant will acquire the knowledge of instrument procedures in the multi-engine airplane with both engines operating and with one engine inoperative.

D. CONTENT:
OPERATING ON INSTRUMENTS
- ☐ Maintaining the Proper Attitude
- ☐ Departure
- ☐ Enroute
- ☐ Instrument Approach on One Engine

E. COMPLETION STANDARDS:
- The applicant will demonstrate knowledge of the additional considerations involved in planning a flight under IFR in a multi-engine airplane during oral quizzing by the instructor.
- The applicant will demonstrate knowledge of human factors relating to aircraft control during engine-out operations in IMC, including basic instrument procedures and instrument procedures with one engine inoperative by explaining elements selected by the instructor.
- The applicant will complete Exercise 5C with a minimum passing score of 80%, and the instructor will review each incorrect response to ensure complete understanding before progressing to Ground Lesson 6.

FLIGHT TRAINING

FLIGHT TRAINING COURSE OBJECTIVES

The applicant will obtain the aeronautical skill and experience necessary to meet the requirements for the addition of an airplane Multi-Engine land class rating to an existing pilot certificate or for an initial commercial pilot certificate with airplane class and multi-engine land class rating.

For additional class rating, If the applicant doesn't hold an instrument rating, he/she must complete Stage I (Flight Lesson 1 though 8) and preparation for the FAA practical test (Flight Lesson 15). If the applicant hold an instrument rating, he/she must complete Stage I (Flight Lesson 1 though 8) and Stage II (Flight Lesson 9 and 10) and preparation for the FAA practical test (Flight Lesson 15).

For initial commercial pilot certification with multi engine land class rating, the applicant must complete all Stages to meet the requirements of FAR part 61. 129 (b).

FLIGHT TRAINING COURSE COMPLETION STANDARDS

The applicant will demonstrate through flight tests and school records that the aeronautical skill and experience necessary to obtain an airplane multi-engine land class rating or initial commercial pilot certificate (part 61.129 (b))have been met.

FLIGHT LESSON 1

Introduction-local

Lesson objective

- Become familiar with the training airplane and its systems.
- Learn about certificate, documents, and checklists. Understand how to conduct the necessary preflight activities. Learn about the functions of the flight controls, and how they are used to maintain specific attitude.
- Gain an understanding of preflight preparation and procedures.

Preflight discussion

☐ Certificates and documents
☐ Airworthiness requirement
☐ Airplane logbook
☐ Airplane servicing
☐ Performance
☐ Takeoff briefing

Introduce

☐ Use of checklists
☐ Operation of systems
☐ Equipment check
☐ Location of first aid kit
☐ Location of fire extinguisher
☐ Engine starting
☐ Radio communication
☐ Positive exchange of flight control
☐ Taxiing
☐ Before takeoff check
☐ Takeoff briefing
☐ Normal takeoff and climb
☐ Straight-and-level flight
☐ Climb, descend, and leveloff
☐ Medium bank turn in both directions
☐ Change airspeed
☐ Hood (4 basic)
☐ Normal approach and landing
☐ After landing , parking and securing

Completion standard

- At the completion of this lesson, the applicant will be able to perform the listed ground operations with a minimum of instructor assistance. The applicant will demonstrate the knowledge of attitudes, power settings, and configurations necessary to perform the listed maneuvers and procedures by maintaining altitude ±200 feet, headings ±10 degree, and airspeeds ±10 knots.
- The applicant will also adequately explain the aeronautical knowledge areas selected by the instructor.

FLIGHT LESSON 2

Slow Flight, Stalls, Steep turn and emergency descent

Lesson objective

- Review procedures and maneuvers introduced in lesson 1, especially preflight activities, ground operations, and attitude control during basic maneuvers using visual reference(VR).
- Introduce stalls from various flight attitude to increase understanding of airplane control during normal and critical flight conditions.
- Emphasis will be on correct procedures for preflight and ground operation.

Preflight discussion

☐ Human factors concept
☐ Preflight activities
☐ Engine starting
☐ Airport, runway, and taxiway signs, marking and lighting
☐ Ground operations, including crosswind taxiing
☐ Collision avoidance precautions
☐ Airspeed and configuration change

Introduce

☐ Slow flight
☐ Power off stall
☐ Power on stall
☐ Steep turn
☐ Emergency descent

Review

☐ Preflight inspection
☐ Certificates and documents
☐ Airworthiness requirements
☐ Operation of systems
☐ Positive exchange of flight controls
☐ Use of check lists
☐ Engine starting
☐ Taxiing
☐ Before takeoff check
☐ Normal takeoff and climb
☐ Straight-and-level flight (VR/IR)
☐ Climb, descend, and leveloff (VR/IR)
☐ Medium bank turn in both directions (VR/IR)
☐ Normal approach and landing
☐ After landing , parking and securing

Completion standard

- At the completion of this lesson, the applicant will be able to perform all the listed ground procedures without instructor assistance. The applicant will demonstrate the ability to prepare the airplane for flight, properly accomplish the appropriate checklists, operate the airplane safely during normal, all-engine flight and accomplish the required procedures and maneuvers within the limits established by the Commercial Pilot Practical Test Standards.
- During the listed maneuvers, the applicant will maintain specified airspeed ±15kt, heading ±15 degrees , rollouts from turns ±15degrees of assigned headings, and specified altitudes ±150 feet. In addition, the applicant will be able to demonstrate the correct flight procedures for maneuvering during slow flight, steep turns, emergency descents, and the correct entry and recovery procedures for stalls.
- All stalls and maneuvering during slow flight must be completed no lower than 3,000 feet AGL. The applicant will also adequately explain the elements of multi-engine aerodynamics, normal operations, maneuvers, and procedures selected by the instructor.

FLIGHT LESSON 3

Introduction to one engine flight, hood

Lesson objective

- Review airspeed control during basic maneuvers.
- Review stalls, steep turns, emergency descent to gain proficiency.
- Introduce one engine flight and drag demonstration.
- Attitude control by instrument reference(IR).
- Emphasis will be directed to proper execution of the listed maneuvers and procedures.

Preflight discussion

☐ Aerodynamics of one engine flight
☐ Effect of drag
☐ Basic instrument maneuvers

Introduce

☐ Gradual power reduction on one engine
☐ Drag demonstration

Review

☐ Normal takeoff and climb
☐ Straight-and-level flight
☐ Climb, descend, and level offs (VR/IR)
☐ Slow flight (VR/IR)
☐ Power off stall (VR/IR)
☐ Power on stall (VR/IR)
☐ Steep turn
☐ Emergency descent
☐ Flight at approach speed
☐ Normal approach and landing
☐ After landing , parking and securing

Completion standard

- Display increased proficiency in coordinated airplane attitude control during basic maneuvers.
- Indicate basic ability to control airplane with only one engine.
- Demonstrate basic understanding of how each drag item affect the performance.
- Landings completed with instructor assistance.
- Maintain altitude within ± 100 feet during airspeed transitions and while maneuvering at slow airspeed.
- Indicate basic ability to control attitude by instrument reference (IR).

FLIGHT LESSON 4

Vmc demo, hood

Lesson objective

- Practice maneuvers listed for review to gain additional proficiency and demonstrate the ability to recognize and recover from stalls.
- The student will also receive instruction and practice in the maneuvers and procedures listed for introduction, including emergency operations and additional practice of airplane control by the instrument reference (IR).
- Emphasis will be on procedure related to airport operations, steep turns, slow flight, stalls and stall recovery.

Preflight discussion

☐ Wake turbulence avoidance
☐ Work load management
☐ Pilot-in-command responsibility
☐ Emergency procedure and equipment malfunctions
☐ Emergency field selection.

Introduce

☐ Vmc demonstration
☐ Change airspeed(IR)
☐ Slow flight(IR)
☐ Power off stall(IR)
☐ Power on stall(IR)
☐ Steep turn(IR)
☐ Spin awareness

Review

☐ Airspeed and configuration change
☐ Flight at approach speed
☐ Flight at various airspeed from cruise to slow flight
☐ Maneuvering during slow flight
☐ Power on stall
☐ Power off stall

Completion standard

- Display increased proficiency in coordinated airplane attitude control during basic maneuvers.
- Perform unassisted takeoffs.
- Demonstrate correct communications.
- Landings completed with instructor assistance.
- Demonstrate basic understanding of steep turns, slow flight, stalls, stall recovery and emergency operations.
- Indicate basic understanding of airplane control by use of flight instruments.

FLIGHT LESSON 5

Emergency procedure,hood

Lesson objective

- Practice the review maneuvers to gain proficiency.
- Introduce ground reference maneuvers and maneuvering at slow airspeed by instrument reference.(IR).
- Emphasis will be on emergency landing procedure.

Preflight discussion

☐ Pilot-in-command responsibility
☐ Emergency procedure and equipment malfunctions
☐ Emergency field selection.

Introduce

☐ In flight emergency procedure
☐ Feathering
☐ Securing
☐ Restarting
☐ Emergency procedure (IR)

Review

☐ Maneuvering during slow flight(VR/IR)
☐ Power off stalls(VR/IR)
☐ Power on stalls(VR/IR)
☐ Spin awareness

Completion standard

- Display increased proficiency in coordinated airplane attitude control during basic maneuvers.
- Perform unassisted takeoffs.
- Demonstrate correct communications.
- Landings completed with a minimum of instructor assistance.
- Maintain altitude ±225 feet and heading ± 15°during straight-and-level flight.
- Demonstrate the ability to recognizes and recover from stalls
- Indicate basic understanding of attitude instrument flying and simulated emergency landing procedure.

FLIGHT LESSON 6

Normal/crosswind takeoffs and landings

Lesson objective

- Practice the review maneuvers to gain proficiency.
- Introduce normal and crosswind takeoffs and landings, go around and no flap landing.
- Emphasis will be on go-arounds and any of the more advanced maneuvers that appear to be difficult for the student.

Preflight discussion

☐ Communication
☐ Workload management
☐ Lost communication procedure
☐ Runway incursion avoidance
☐ Land and hold short operations(LAHSO)
☐ Situational awareness
☐ Realistic destruction
☐ Determining wind direction
☐ Wake turbulence avoidance
☐ Work load management
☐ Pilot-in-command responsibility

Introduce

☐ Normal takeoffs and landings
☐ Crosswind takeoffs and landings
☐ Go-around/Rejected landing
☐ No flap landing

Review

☐ Rectangular course

Completion standard

- Display increased proficiency in coordinated airplane attitude control.
- Demonstrate normal, crosswind takeoff and landing, no flap landing and go-around at the level of pertinent PTS.
- Demonstrate proper decision to make timely go-around.
- Indicate knowledge of crosswind takeoffs/landing procedure and go-arounds.

FLIGHT LESSON 7

Short field takeoffs and landings

Lesson objective

- Practice the review maneuvers to gain proficiency.
- Introduce short field takeoffs and landings.
- Emphasis will be on go-arounds and any of the more advanced maneuvers that appear to be difficult for the student.

Preflight discussion

☐ Weight and balance
☐ Performance
☐ Work load management
☐ Pilot-in-command responsibility

Introduce

☐ Short field takeoffs and landings

Review

☐ Normal and crosswind takeoffs and landings
☐ Go-around/Rejected landing
☐ No flap landing

Completion standard

- Display increased proficiency in coordinated airplane attitude control.
- Be able to select proper takeoff and landing speed for the weight of aircraft.
- Demonstrate basic understanding of the elements of short field takeoff and landing.
- Perform short field takeoff and landing at the level of pertinent PTS.

FLIGHT LESSON 8

Aborted takeoff and single engine landings

Lesson objective

- Practice the review maneuvers to gain proficiency.
- Introduce one engine failure during takeoff roll, after liftoff and single engine landing.
- Emphasis will be on importance of stabilized approach when the clime performance is limited.

Preflight discussion

☐ Weight and balance
☐ Performance
☐ Emergency procedure
☐ Work load management
☐ Pilot-in-command responsibility

Introduce

☐ Aborted takeoff
☐ Single engine landings
☐ Review
☐ Normal and crosswind takeoffs and landings
☐ Short field takeoffs and landings
☐ Go-around/Rejected landing
☐ No flap landing

Completion standard

- Be able to recognize the loss of engine .
- Demonstrate ability to maintain a specific heading and proper airspeed after losing one engine.
- Be able to make proper control input necessary to handle one engine out situation.
- Demonstrate emergency procedure and single engine landing at the level of pertinent PTS.

FLIGHT LESSON 9

Instrument review

Lesson objective

- Practice basic instrument maneuvers to gain proficiency.
- Introduce instrument approach.
- Review airspeed and configuration change from cruise to approach.

Preflight discussion

- ☐ Approach chart
- ☐ Approach briefing
- ☐ Approach clearance
- ☐ Performance
- ☐ Configuration and power setting
- ☐ Work load management
- ☐ Pilot-in-command responsibility

Introduce

- ☐ Precision approach
- ☐ Non-precision approach
- ☐ Landing from straight-in approach
- ☐ Circling approach
- ☐ Missed approach

Review

- ☐ Straight-and-level flight(IR)
- ☐ Standard rate turn(IR)
- ☐ Constant speed clime(IR)
- ☐ Constant speed/rate descent(IR)
- ☐ Change airspeed/configuration from cruise to approach(IR)
- ☐ Holding

Completion standard

- Demonstrate basic understanding of preparation for instrument approach. Increased proficiency in coordinated airplane attitude control.
- Demonstrate ability to fly a specific course within 3/4 scale while maintaining altitude ± 100 feet.
- Demonstrate precise and accurate control of pitch, bank and power.

FLIGHT LESSON 10

Instrument approach(single engine)

Lesson objective

- Practice emergency instrument maneuvers to gain proficiency.
- Introduce single engine instrument approach.

Preflight discussion

- ☐ Emergency procedure
- ☐ Approach chart
- ☐ Approach briefing
- ☐ Approach clearance
- ☐ Performance
- ☐ Configuration and power setting
- ☐ Work load management
- ☐ Pilot-in-command responsibility

Introduce

- ☐ Precision approach(single engine)
- ☐ Non-precision approach(single engine)
- ☐ Straight-in landing
- ☐ Circling approach

Review

- ☐ Engine out procedure(IR)
- ☐ Single engine landings

Completion standard

- Display increased proficiency in coordinated airplane attitude control.
- Demonstrate ability to fly a final approach course within 3/4 scale while maintaining altitude ± 100 feet.
- Demonstrate basic understanding of how the failure of one engine affects the pitch, bank and yaw.
- Demonstrate precise and accurate control of pitch, bank and power.

FLIGHT LESSON 11

Night flight

Lesson objective

- Practice the review maneuvers to gain proficiency.
- Introduce normal and crosswind takeoffs and landings, go around, no flap landing and slip.
- Review ground reference maneuvers.
- Emphasis will be on go-arounds and any of the more advanced maneuvers that appear to be difficult for the student.

Preflight discussion

☐ Night vision
☐ Night operation
☐ Airport lighting
☐ Aircraft lighting
☐ Pilot-in-command responsibility

Introduce

☐ Night maneuvers(slow flight, power off stall, power on stall, steep turn, Vmc demo, engine out procedure)
☐ Takeoffs and landings at night at an controlled airport

Review

☐ Normal and crosswind takeoffs and landings
☐ Go-around/Rejected landing
☐ No flap landing

Completion standard

- Display increased proficiency in coordinated airplane attitude control d.
- Demonstrate ability to fly a specific ground track while maintaining altitude ± 200 feet.
- Demonstrate basic understanding of how the forward slip is used for an approach to landing, ability to recognize and recover from stalls
- Indicate knowledge of crosswind takeoffs/landing procedure and go-arounds.

FLIGHT LESSON 12

Cross country Dual-Day, 100 NM 2 hours

Lesson objective

- Introduce cross-country procedures and the proper techniques to be used during flight out of the local training area including use of VOR and radar service.
- Prepare the student to make cross-country flights as the sole occupant of the airplane.
- Review emergency operations.
- Emphasize cross-country navigation procedures.

Preflight discussion

- ☐ Sectional chart
- ☐ Flight publications
- ☐ Route selection and basic navigation procedures (pilotage and dead reckoning)
- ☐ Weather information
- ☐ Fuel requirements
- ☐ Performance and limitations
- ☐ Navigation log
- ☐ FAA flight plan (how to file, open, close and amend)
- ☐ Weight and balance
- ☐ Cockpit management
- ☐ Aeromedical factors
- ☐ Aeronautical decision making
- ☐ Resource use
- ☐ Workload management
- ☐ Basic instrument maneuvers and procedures

Introduce

- ☐ Cross-country flight
- ☐ Flight plan considerations
- ☐ Departure
- ☐ Opening flight plan
- ☐ Course interception
- ☐ Pilotage
- ☐ Dead reckoning
- ☐ VOR navigation
- ☐ Use of radar service
- ☐ Power setting and mixture control
- ☐ Actual ground speed computation
- ☐ Lost procedure
- ☐ Diversion
- ☐ Estimate of ground speed and ETA
- ☐ Position fix by VOR
- ☐ Collision avoidance precautions
- ☐ Closing flight plan
- ☐ Refueling Airport operations
- ☐ National airspace system
- ☐ Use of approach/ departure control
- ☐ CTAF/UNICOM
- ☐ Review
- ☐ Emergency operations
- ☐ Systems and equipment malfunctions
- ☐ Runway incursion avoidance
- ☐ Emergency approach and landing (simulated)

Completion standard

- Demonstrate the skill to perform cross-country flight safely as the sole occupant of the airplane including use of VOR and radar service under simulated instrument condition.
- Demonstrate complete preflight planning, weather analysis, use of FAA publications and chart, adherence to the preflight plan and the use of pilotage, dead reckoning, radio communication and VOR.

FLIGHT LESSON 13

Night cross country

Lesson objective

- Introduce night navigation and emergency operations.
- Recognize the importance of thoughtful planning and accurate navigation.
- The flight should include a point of landing at least a straight-line distance of more than 100 nautical mile from original point of departure.
- Emphasize precise aircraft control and the navigation accuracy required for night VFR cross-country flight.

Preflight discussion

☐ Night orientation, navigation and chart reading techniques
☐ Weather information
☐ Route selection
☐ Altitude selection
☐ Fuel requirements
☐ Departure and arrival procedures

Introduce

☐ Use of ATIS
☐ Pilotage Dead reckoning
☐ Radio navigation (VR/IR)
☐ Emergency operation
☐ Use of unfamiliar airport
☐ Collision avoidance precaution
☐ Lost procedure
☐ Diversion
☐ Unusual attitude recovery(IR)

Review

☐ Preparation for night flight
☐ Aeromedical factors
☐ Flight plan consideration
☐ Slow flight
☐ Normal takeoffs and climbs
☐ Normal approaches and landings
☐ Short field takeoffs /maximum performance climbs and landings
☐ Go-around/rejected landing

Completion standard

- Demonstrate an understanding of night cross-country preparation and flight procedure including ability to maintaining attitude by instrument reference.
- Navigation should be accurate and simulated emergency situation should be handled promptly utilizing proper instrument.
- Landing approach stabilized with touchdown at or near the appropriate touchdown area on the runway.

FLIGHT LESSON14

Long cross-country(time performing duty of PIC)

Lesson objective

- During this lesson, the student will complete the long cross-country requirement.
- The flight should be of at least 300 nautical miles, total distance, with landings at a minimum of three points, including one airport which is more than 250 nautical miles from RHV.
- Emphasize cross-country procedures and rules for flight within national airspace systems.

Preflight discussion

- ☐ Conduct of the planned flight
- ☐ Cockpit management, decision making, and judgment
- ☐ FAA flight plan(how to open, close, or amend)
- ☐ Use of a magnetic compass
- ☐ Emergency operations
- ☐ En route communication and facilities
- ☐ In-flight weather analysis
- ☐ Unfamiliar airport operations

Review

- ☐ Preflight preparation
- ☐ National airspace system
- ☐ Sectional charts
- ☐ Flight publication
- ☐ Route selection
- ☐ Weather information
- ☐ Fuel requirements
- ☐ Performance and limitations
- ☐ Weight and balance
- ☐ Navigation log
- ☐ FAA flight plan
- ☐ Cross-country flight
- ☐ Opening and closing the flight plan
- ☐ VOR navigation
- ☐ Pilotage
- ☐ Dead reckoning
- ☐ Estimate of ground speed
- ☐ Estimate of ETA
- ☐ Use of controlled airport
- ☐ Use of airport with CTAF(FSS and/or UNICOM)

Completion standard

- Demonstrate cross-country proficiency by completing the flight as planned and without incident.
- Review the completed navigation log during the post flight evaluation to determine whether it was completed and used correctly.
- The cross-country must include a distance of over total 300 nautical miles with landings at a minimum of three points, including a landing at an airport which is straight-line distance at least 250 nautical miles from original departure point.

FLIGHT LESSON 15

Review

Lesson objective

- The student will review and practice all the multi-engine maneuvers and procedures as a preparation for stage FAA practical test.
- The instructor will evaluate the student's skills and have student practice his weak point as needed.
- The review items may be performed with all engines operating or with one engine inoperative (simulated).

Preflight discussion

☐ s in preparation for the FAA practical test, including spin awareness and night operations.

Review

☐ Preflight preparation
☐ Ground operation
☐ Maneuvering during slow flight
☐ Power off stall
☐ Power on stall
☐ Steep turns
☐ Emergency descent
☐ Vmc demo
☐ Engine out procedure in flight
☐ Aborted takeoff
☐ Normal and crosswind takeoff and landing
☐ Go-around/Rejected landing
☐ Shot field takeoff/maximum performance climbs and landings
☐ No flap landing
☐ Single engine landing
☐ Instrument approach
☐ After landing, parking, and securing
☐ Cross-country flight procedures(initial commercial)

Completion standard

- The student should exhibit competence and ability to correct any weak performance areas determined previously.
- Perform all maneuvers and procedures with proper coordination and precision according to the criteria established in the FAA practical test standard