141 PPC AKT

TRAINING COURSE OUTLINE & SYLLABUS

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1 MANUAL ADMINISTRATION

The Training Course Outline is issued by CAE Aviation Academy Phoenix LLC. under the authority of Chief Instructor, Michael Andrew Orvek.

Content in this manual serves as compliance with 14 CFR 141 and must be approved by the Federal Aviation Administration (FAA) Flight Standards District Office (FSDO).

When the amendment or revision concerns any part of this manual must be approved by the authority, including any changes or additions to training programs and syllabi, this approval must be obtained before the amendment or the revision becomes effective.

1.1 Revision

Revisions to the internet-based training content (Private Airplane Pilot Part 141), except those identified here, must be approved by the FAA before implementation. Per 14 C.F.R. § 141.53 (d)(1), minor editorial and typographical changes do not require FAA approval, provided the school notifies the FAA within 30 days of their insertion.

All revisions requiring FAA approval (referred to going forward as major revisions), will be recorded in the Summary of Revisions and List of Effective Pages below; denoted by a sequential number in the title page of this TCO (ex: Private Pilot Part 141(1)); displayed in the student's Account view in the CAE Classroom iOS application, and submitted to the FSDO having jurisdiction over the school and approved by the FAA prior to incorporation into this manual.

Minor changes not requiring FAA approval, referred to going forward as minor revisions, will be denoted by a sequential decimal following the major revision number in the student's Account view in the CAE Classroom iOS application (not to be included on the title page of this TCO (ex: Private Pilot Part 141 (1.1))) and submitted to the FSDO having jurisdiction over the school within 30 days of their insertion.

Major revision will apply to all students unless otherwise determined by the Chief Instructor.

1.2 Summary of Revisions

This list reflects the most significant changes in this revision. In addition to the changes indicated below, additional formatting, spelling and grammatical changes may have been made.

Revision	Date	Effective Pages	Change Description
Original	12 Jan 2023	All	
1	25 February 2025	15	Revision 1 – Section 1, Manual Administration, Change of Chief Instructor. Section 3.1 and 3.2 Change of Chief Instructor, Removed Assistant Chief Instructor

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1.3 List of Effective Pages

Revision effective date is based on approval/acceptance from the FAA FSDO or otherwise specified.

Page	Manual	Revision Number	Date
1 thru 17	Ground TCO	Revision 1	25 February 2025
18 thru 108	Ground Syllabus	Original	12 Jan 2023

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2 ORGANIZATION AND FACILITIES

2.1 Company Details

CAE Aviation Academy Phoenix LLC., located at Falcon Field Airport (KFFZ), Mesa, Arizona, holds FAA Air Agency Certificate No. B4VS470K.

CAE Aviation Academy Phoenix LLC. is:

Owned by:

CAE, 8585 Cote de Liesse, Montreal, Quebec, Canada H4T 1G6

Operated as:

CAE Aviation Academy Phoenix LLC. 5010 E.

Falcon Drive

Mesa, AZ 85215

2.2 Course Title

141 PPC AKT

This course will be referred to as **Private Pilot Airplane Part 141** in the CAE Classroom iOS application

2.3 Student Eligibility

Students are required to meet ICAO Level 4 English standards prior to starting the course and at any time while enrolled in this course.

Students enrolling in this course must have reached an age of 16 years of age prior to taking the FAA Airman Knowledge Test.

2.4 TCO Curriculum Requirements

This TCO meets or exceeds all the curriculum requirements for the Aeronautical Knowledge training requirements for the Private Pilot Course contained in Appendix B of 14 CFR 141 and is approved under14 CFR 141.11, Appendix L.

2.4.1 Training Syllabus Contents

The 141 PPC AKT course is approved for CAE Aviation Academy Phoenix LLC.

The 141 PPC AKT course is approved under 14 CFR 141.11, Appendix L for CAE Aviation Academy Phoenix LLC. and is in place to meet the 14 CFR 141 Appendix B (3) Aeronautical Knowledge Training requirements for the Private Pilot Certificate.

2.5 Delivery of Ground School

The 141 PPC AKT course will consist of at least 35 hours of ground training, meeting the training hour requirements of 14 C.F.R. § 141, Appendix B (3)(a)(1). Ground training is conducted using the CAE Classroom iOS application to access the **Private Pilot Airplane Part 141** computer-based training content available on iPad and iPhone devices.

Approximate Lesson Times:

Each lesson specifies approximate lesson times which is derived by the average time it takes a person to complete.

Minimum Activity Time:

Students must spend a minimum time in a lesson activity before the "Next" button is enabled. If the student taps on the Next button before the minimum time expires, they will be shown a warning.

Maximum Activity Time:

Students cannot accrue course time by simply leaving the app open without interacting with the course. If the app detects a period of inactivity, a warning is displayed with a countdown timer. The period of inactivity varies depending on the activity and depends on the type of activity and historical averages to complete the activity.

If the student does not acknowledge the warning, the session automatically closes, and the student must begin the activity again. In addition, a student can only accrue a maximum amount of time for an activity no matter how many times the student acknowledges the warning.

Inactivity warnings and time caps in quizzes, exams, and other question sessions take into account the time the average student needs to answer the type of question presented. Questions that require chart plotting, interpolation, and calculations have higher time caps and inactivity thresholds than rote questions.

2.6 Rules of Conduct

All course activity is recorded to ensure training integrity. The Chief Instructor and designated personnel will monitor course activity using the FlightReady Training and Operations Management (TOM) dashboard for compliance with the following rules. Engaging in any prohibited conduct, dishonesty, or cheating will result in removal of course progress and suspension of the account.

1. Students may not take screenshots, videos, or photos of any course content, except to obtain technical support or to consult with an instructor
    a. The application detects when screenshots are taken and is compiled on a report monitored by the Chief Instructor
2. Students may not permit any other person to complete any part of this course
3. Students may not use this app on more than one device at the same time
    a. The application detects and logs the user's Internet Protocol (IP) address and device identifier each time it is opened. Unusual activity, such as the use of multiple devices at the same time, is logged and reported in the administrative dashboard for the application
4. Students may not use another student's account, or share login information with other students
5. Questions must be answered from personal knowledge. Students may not copy, share, memorize answers, or tap on random answers to reveal the correct answer
6. When taking a quiz, stage exam, or practice exam, students may not:
    a. Consult with any other person
    b. Refer to any outside resources other than the FAA Knowledge Test Supplement
    c. Force-close the app or switch apps
7. This course requires a minimum number of hours. Only legitimate activity is counted, and activity done primarily to log course time is not counted

Any student caught or suspected of violating these Rules of Conduct will be required to repeat the suspect lesson or test(s) under the supervision of the Chief Instructor, Assistant Chief Instructor, or designated Check Instructor. Any student caught violating these Rules of Conduct a second time will be withdrawn from this course and not permitted to receive a Graduation Certificate.

Student training records will be updated daily from FlightReady into ETA. This will include lesson, date, score, and number of attempts. This will be done through the use of manual entry or API provided by FlightReady.

2.7 141.53(d)(3)(i-v) Compliance

This course will comply with the requirements of 141.53(d)(3)(i-v) using the following:

Integrity

To protect against physical loss of data, all student course data is stored locally on the student's device and synced in real-time to a remote primary database, and then from the remote database to a second database that acts as a standby. In the event of failure of the primary database, the second database is promoted to the primary database within seconds of the failure. The primary database is backed up every 5 minutes, and all backups are retained for a minimum 30 days.

Logical integrity of all databases is ensured via (i) the use of primary keys that may not be blank or null to ensure that each record is unique, (ii) the use of foreign keys to maintain referential integrity to other tables by preventing duplication of records and broken dependencies when records are added or removed, and (iii) the enforcement of acceptable values for each database column to limit the format, type, and amount of data entered, and to prevent null or blank values where data is required.

Identification/Authentication

The CAE Classroom application requires students to log in with their e-mail address and password. When a student is enrolled in the course, the student is furnished with a temporary password. Upon logging in for the first time, the student must change the password. Password changes require access to the same e-mail address used to enroll the student, thereby preventing third parties from gaining access to the student's account by simply changing the password.

Confidentiality

Confidentiality of a student's personal information and course data is maintained by (i) requiring a password to access the student application and the FlightReady Training and Operations Management dashboard used to monitor student progress, (ii) restricting access to the database to authorized employees, and only after authentication with a password from IP addresses explicitly authorized by FlightReady, (iii) restricting access to the FlightReady Training and Operations Management dashboard to persons authorized by the student's school, and (iv) limiting the disclosure, access, and use of data in a manner consistent with FlightReady's privacy policy, available at https://aviation.flightready.net/privacy

Availability

Access to the Private Pilot Part 141 course on the CAE Classroom application may be accessed by students 24 hours a day, 7 days a week, via the iOS application, CAE Classroom, iTunes App ID 6443660263, and may be downloaded free at https://apps.apple.com/us/app/cae-classroom/id6443660263.

Access Control

Access to the Private Pilot Part 141 course on the CAE Classroom application is restricted to CAE students who (i) have been issued an account and password, and (ii) are enrolled in the course.

2.8 Unsatisfactory Performance

If the student fails to meet the minimum 75% passing score on any of the Stage Exams, that exam must be taken again and the student cannot advance to the next block until the exam is passed with a minimum score of 75%.

If a student does not pass a lesson on the third attempt, the course will be locked until remedial training is conducted between an authorized instructor. This remedial training will be recorded in ETA via the "Comments" section of the student's training records and must include the following:

1. Topics covered
2. Duration of remedial training lesson
3. Date remedial training takes place

2.9 Ground Training Facilities

Ground instructional facilities for online format may be accessed by students 24 hours a day, 7 days a week, via the iOS application, CAE Classroom, iTunes App ID 6443660263, and may be downloaded free at https://apps.apple.com/us/app/cae-classroom/id6443660263.

2.9.1 Training Aids

Physical Training aids for this course include:

- Electronic Smartboard
- iPad, tablet, laptop and/or computer with an electronic document library

Digital Training aids for this course include:

- Aircraft cockpit layout poster
- Analog Aircraft components to include:
  - Directional Gyro
  - Turn coordinator
  - VOR receiver
  - Vertical Speed indicator
  - Horizontal Situation Indicator
  - Attitude Indicator
  - Airspeed Indicator
  - Altimeter
- Aeronautical Navigation Charts
- Electronic Garmin G1000 Desktop trainer
- Publications provided include the following:
  - AFM/POH
  - Operations Manual
  - Garmin G1000 Avionics Manual
  - Current FAR/AIM
  - Airplane Flying Handbook
  - Pilot's Handbook of Aeronautical Knowledge
  - Aviation Weather

- Private Pilot ACS

Optional equipment and training aids may be provided by an instructor for the purpose of demonstration and explanation. Examples may include model aircraft, small aircraft components, instrument panel mockups and/or diagrams and actual instruments (dismantled or cut away).

2.10 Operations Manual

CAE Aviation Academy Phoenix LLC. maintains a current Operations Manual (OM) that all Instructors and Students must utilize during flight and ground operations. This Manual complies with 14CFR 141.93 (a)(3) and contains the Safety Procedures and Practices developed by CAE Aviation Academy Phoenix LLC.

2.11 Operations Administration

The briefing area contains 18 private briefing rooms for use by instructor and students for pre-& post-lesson briefings. These rooms all have a whiteboard and computer with PowerPoint. A flight planning area contains table and chairs for use by students for preflight planning for each lesson.

The main flight planning area has direct telephone access to the Flight Service Station, supplemented by computer terminals with Internet access to FAA approved source(s) of weather. The main flight planning area is also equipped with multiple individual briefing stations that can be used for the purposes of pre-and post-flight briefings. All individual briefing stations are equipped with a computer, whiteboard, and multi-color markers. All individual briefing stations adequately lighted and air-conditioned to provide a proper learning environment.

3 PERSONNEL

3.1 Chief Instructor

The Chief Instructor at CAE Aviation Academy Phoenix LLC. shall comply with the requirements of 14 CFR 141.35 and 14 CFR 141.79. The Chief Instructor is Michael Andrew Orvek.

3.2 Assistant Chief Instructor

The Assistant Chief Instructor if one is approved shall comply with the requirements of 14 CFR 141.36 and14 CFR 141.79.

3.3 Ground Instructors/Check Instructors

Each ground instructor assigned to this course that does not also hold a valid and current Flight Instructor Certificate with at least an Airplane Single Engine rating, must hold a valid and current Ground Instructor Certificate with at least an Advanced Ground Instructor Rating. Each ground instructor will accomplish an initial teaching evaluation with the Chief Instructor, Assistant Chief Instructor, or Check Instructor. All Ground Instructors must comply with the requirements of 14 CFR 141.81.

Check Instructors shall comply with the requirements of 14 CFR 141.37, 14 CFR 141.79 in addition to the above paragraph.

4 OVERVIEW GROUND TRAINING SYLLABUS

The Ground Training Syllabus contained herein meets the curriculum requirements for the Aeronautical Knowledge Training for the Private Pilot Certification Course contained in Appendix B 3 of CFR Part 141.

4.1 Ground Training Lesson Summary Tables

Stage	Block	Lesson	Duration (hours)
1	1	The Airplane	0.3
		Electrical Systems	0.3
		Fuel Systems	0.3
		Hydraulic Systems	0.2
		Piston Engines	0.5
		Propellers	0.3
		Altimeter	0.4
		Airspeed Indicator	0.4
		Pitot-Static System	0.3
		Gyroscopic Instruments	0.3
		Magnetic Compass	0.4
		Block 1 Stage Exam	1
	2	Sectional Charts	0.5
		Chart Supplements	0.3
		Airspace Classes	0.7
		Transponder & ADS-B	0.4
		Special Use Airspace	0.3
		Other Airspace	0.3
		NOTAMs	0.3
		Block 2 Stage Exam	1
	3	The Atmosphere	0.4
		Atmospheric Circulation	0.3
		Wind	0.3
		Air Masses And Fronts	0.4
		Atmospheric Stability	0.4
		Precipitation	0.2
		Clouds	0.3
		Fog	0.3
		Wind Shear	0.2
		Microbursts	0.2
		Turbulence	0.3
		Thunderstorms	0.3

1	3	Introduction To Weather Services	0.3
		METARs	0.3
		PIREPs	0.2
		Terminal Aerodrome Forecasts	0.3
		Winds Aloft Forecasts	0.3
		Inflight Aviation Weather Advisories	0.2
		Weather Forecast Charts	0.3
		Weather Analysis Charts	0.2
		Block 3 Stage Exam	1
	4	Principles Of Flight	0.4
		Aerodynamics	0.6
		Airplane Stability And Control	0.5
		Flight Controls	0.4
		Density Altitude	0.4
		Stalls And Spins	0.4
		Block 4 Stage Exam	1
	5	Flight Rules (VFR)	0.6
		VFR Weather Minimums	0.4
		NTSB Regulations	0.2
		Pilot Certification	0.4
		Medical Certification	0.3
		Airplane Performance	0.8
		Weight And Balance	0.5
		Health And Physiological Factors	0.6
		Aeronautical Decision Making	0.4
		Aircraft Documents	0.3
		Maintenance And Inspections	0.4
		Aircraft Equipment (VFR)	0.3
		Block 5 Stage Exam	1
	6	Runways And Taxiways	0.4
		Airport Signs	0.3
		Airport Lighting	0.3
		Visual Glideslope Indicators	0.3
		Radio Communications	0.2
		Ground Operations	0.4
		Traffic Pattern Operations	0.5
		Night Operations	0.3
		Private Pilot Maneuvers	0.3

1	6	Collision Avoidance	0.3
		Cold Weather Operations	0.3
		Land And Hold Short Operations	0.2
		Wake Turbulence Avoidance	0.3
		Pilotage & Dead Reckoning	0.6
		Cross-Country Flight Planning (VFR)	0.8
		VOR Navigation	0.7
		GPS Navigation	0.2
		Abnormal And Emergency Procedures	0.3
		Loss Of Communications (VFR)	0.2
		Block 6 Stage Exam	1
	Final Requirements		2.0
End of Course Test			N/A
		Total	**35**

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5 GROUND TRAINING SYLLABUS

5.1 Ground Training Objectives

The ground training objectives are to provide the student with the aeronautical knowledge necessary to safely operate an airplane as a Private Pilot with a Single-Engine Land class rating; satisfactorily complete the FAA Private Pilot – Airplane knowledge test; and to meet the 14 C.F.R. § 141 Appendix B requirements for Private Pilot – Airplane Single-Engine to include:

i. Applicable Federal Aviation Regulations for private pilot privileges, limitations, and flight operations;
ii. Accident reporting requirements of the National Transportation Safety Board;
iii. Applicable subjects of the "Aeronautical Information Manual" and the appropriate FAA advisory circulars;
iv. Aeronautical charts for VFR navigation using pilotage, dead reckoning, and navigation systems;
v. Radio communication procedures;
vi. Recognition of critical weather situations from the ground and in flight, windshear avoidance, and the procurement and use of aeronautical weather reports and forecasts;
vii. Safe and efficient operation of aircraft, including collision avoidance, and recognition and avoidance of wake turbulence;
viii. Effects of density altitude on takeoff and climb performance;
ix. Weight and balance computations;
x. Principles of aerodynamics, powerplants, and aircraft systems;
xi. If the course of training is for an airplane category or glider category rating, stall awareness, spin entry, spins, and spin recovery techniques;
xii. Aeronautical decision making and judgment; and
xiii. Preflight action that includes -
    i. How to obtain information on runway lengths at airports of intended use, data on takeoff and landing distances, weather reports and forecasts, and fuel requirements; and
    ii. How to plan for alternatives if the planned flight cannot be completed or delays are encountered.

5.2 Ground Training Completion Standards

To graduate from this course, the following requirements must be met:

- **Complete all lessons in order**
  - To complete a lesson, all activities in the lesson must be completed and the end of lesson quiz must be passed
- **Pass all stage exams with a minimum score of 75%**
  - Stage exams are unlocked after all lessons in the stage are completed
- **Meet the minimum course time of 35 hours**
  - Time spent reviewing completed activities is not counted
- **Complete 5 simulated FAA exams**
  - The previous 5 simulated FAA exams must be passed with an average score of 90%, with no score below 80%
- **Pass the End of Course exam with a score of 75%**
  - The end of course exam is unlocked after requirements above have been met

5.3 Ground Block 1 – Aircraft Systems

5.3.1 Ground Block 1 Objectives

The objective of Block 1 is for the student to learn about the following topics:

1. The Airplane
2. Electrical Systems
3. Fuel Systems
4. Hydraulic Systems
5. Piston Engines
6. Propellers
7. Altimeter
8. Airspeed Indicator
9. Pitot-Static System
10. Gyroscopic Instruments
11. Magnetic Compass

5.3.2 Ground Block 1 Completion Standards

Ground Block 1 is completed when the student has satisfactorily completed all lessons and quizzes, and the Block 1 Stage Exam with a score of 75% or greater.

5.3.3 Lesson 1 – The Airplane

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of the typical airplane and its major components, including the engine, fuel system, electrical system, and landing gear. These components are covered in detail in later lessons.

The following topics are taught in this lesson:

1. **Types, Categories, and Classes of Aircraft**
2. **FAA Certification Requirements**
3. **FAA Airworthiness Certificate**
4. **Major Airplane Components**
5. **Construction Methods & Materials**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.4 Lesson 2 – Electrical Systems

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Electrical Systems and their major components and operating principles. Aircraft specific system information is covered in manufacturer documentation.

The following topics are taught in this lesson:

1. **Battery Principles of Operation**
2. **Voltage Vs Current**
3. **Battery Capacity**
4. **Battery Types**
5. **Aircraft Electrical Systems**
6. **Circuit Diagrams**
7. **Alternators & Generators**
8. **Voltage Regulator**
9. **Electrical Bus**
10. **Current & Voltage Measurement**
11. **Master Switch**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.5 Lesson 3 - Fuel Systems

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the overview of the basic aircraft fuel system and its major components. The lesson will also provide an overview of the operation and operating principles of basic fuel systems.

The following topics are taught in this lesson:

1. **Primer System**
2. **Fuel Tanks**
3. **Fuel Vents**
4. **Fuel Strainers, Sumps, And Drains**
5. **Aviation Fuel Grades**
6. **Refueling Safety**
7. **Fuel Management**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.6 Lesson 4 - Hydraulic Systems

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of the typical hydraulic system and its major components, including the operating principles of a hydraulic system. Simple Brake and parking brake systems will be discussed. Aircraft specific information regarding equipped hydraulic systems will be available in manufacturer documentation.

The following topics are taught in this lesson:

1. **Pascal's Law**
2. **Hydraulic Fluid**
3. **Brake System**
4. **Parking Brake**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.7 Lesson 5 - Piston Engines

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.5 hours

Objective: The objective of this lesson is to learn the basic overview of the typical piston engine and its major components, including naturally aspirated/forced induction, carbureted/fuel injected engine designs. General operating principles and will be discussed including various hazards.

The following topics are taught in this lesson:

1. **Piston Engine Operating Principles**
2. **Induction System**
3. **Carburetor**
4. **Air-Fuel Mixture**
5. **Exhaust Gas Temperature Gauge**
6. **Carburetor Icing Detection & Avoidance**
7. **Fuel Injection Systems**
8. **Turbocharger**
9. **Oil System**
10. **Oil Type And Weight**
11. **Cooling System**
12. **Exhaust System**
13. **Ignition System**
14. **Magneto Principles of Operation**
15. **Magneto Check**
16. **Engine Abnormalities**
17. **Starting System**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.8 Lesson 6 - Propellers

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of the typical airplane propeller and its major components including fixed/constant speed propellers and basic propeller operating principles and aerodynamics. Aircraft specific information regarding equipped Propeller systems will be available in manufacturer documentation.

The following topics are taught in this lesson:

1. **Blade Twist**
2. **Propeller Diameter and Pitch**
3. **Climb Vs Cruise Propeller**
4. **Measuring Propeller Efficiency**
5. **Fixed-Pitch Propeller**
6. **Constant-Speed Propeller**
7. **Manifold Pressure**
8. **Propeller Governor**
9. **Setting Power And RPM**
10. **Propeller Overspeed**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.9 Lesson 7 - Altimeter

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of Altimetry, Altimeters, Vertical Speed Indicators and their major components, Principles of Operation and associated errors and adjustments.

The following topics are taught in this lesson:

1. **Types Of Altitude**
2. **Altimeter Principles of Operation**
3. **Analog vs Digital (PFD) Altimeters**
4. **Altimeter Setting**
5. **Sensitive Altimeters**
6. **Operating in Extreme Barometric Pressures**
7. **Temperature Error**
8. **ICAO Temperature Correction Table**
9. **Vertical Speed Indicator**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.10 Lesson 8 – Airspeed Indicator

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of Airspeed Indicators and their major components, Principles of Operation, and the various types if airspeed and markings.

The following topics are taught in this lesson:

1. **Airspeed Indicator Principles of Operation**
2. **Indicated Airspeed**
3. **Calibrated Airspeed**
4. **True Airspeed**
5. **Effect of Temperature on True Airspeed**
6. **Groundspeed**
7. **Equivalent Airspeed**
8. **Airspeed Indicator Markings**
9. **V-Speeds**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.11 Lesson 9 – Pitot-Static System

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of the typical Pitot-Static system and its major components, Operating Principles, and blockages. Usage of the alternate static source will be included.

The following topics are taught in this lesson:

1. **Pitot-Static System Principles of Operation**
2. **Effect of Pitot-Static Blockages**
3. **Alternate Static Source**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.12 Lesson 10 - Gyroscopic Instruments

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of typical Gyroscopic instrument systems, Vacuum Systems and their major components, and Operating Principles.

The following topics are taught in this lesson:

1. **Gyroscopic Precession**
2. **Rigidity In Space**
3. **Vacuum System**
4. **Standby Vacuum Pump**
5. **Attitude Indicator**
6. **Heading Indicator**
7. **Turn Coordinator**
8. **Using The Inclinometer**
9. **Preflight Check of Gyro Instruments**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.13 Lesson 11 – Magnetic Compass

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of the of the Magnetic North Pole and the Magnetic Compass and its major components, including the various errors and corrections.

The following topics are taught in this lesson:

1. **The North Magnetic Pole**
2. **Magnetic Azimuth**
3. **Magnetic Compass**
4. **Vertical Card Compass**
5. **Deviation**
6. **Variation**
7. **Magnetic Dip**
8. **Acceleration Error**
9. **Turning Error**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.3.14 Block 1 Stage Exam

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 1.0 hour

Objective: The objective of this lesson is to test your knowledge of topics covered in Block 1.

The following topics are included in this exam:

1. **Airplane Construction & Certification**
2. **Electrical Systems**
3. **Fuel Systems**
4. **Hydraulic Systems**
5. **Piston Engines**
6. **Propellers**
7. **Altimeter**
8. **Airspeed Indicator**
9. **Pitot-Static System**
10. **Gyroscopic Instruments**
11. **Magnetic Compass**

Completion Standards: This lesson will be complete when the test is passed with a minimum score of 75%.

5.4 Ground Block 2 – National Airspace System

5.4.1 Ground Block 2 Objectives

The objective of Block 2 is for the student to learn about the following topics:

1. Sectional Charts
2. Chart Supplements
3. Airspace Classes
4. Transponder & ADS-B
5. Special Use Airspace
6. Other Airspace
7. NOTAMs

5.4.2 Ground Block 2 Completion Standards

Ground Block 2 is completed when the student has satisfactorily completed all lessons and quizzes, and the Block 2 Stage Exam with a score of 75% or greater.

5.4.3 Lesson 12 – Sectional Charts

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.5 hours

Objective: The objective of this lesson is to learn the basic overview of Aeronautical Sectional Charts and its symbology, including the usage of coordinates, Chart legend and elevation figures and contours.

The following topics are taught in this lesson:

1. **Airport Symbols & Information**
2. **Coordinate System**
3. **Variation**
4. **Color Tints**
5. **Maximum Elevation Figure**
6. **Contour Lines**
7. **Obstruction Symbols**
8. **Navigation Aids**
9. **Checkpoints And Waypoints**
10. **Miscellaneous Activity Areas**
11. **Parachute Jump Areas**
12. **Chart Legend**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.4.4 Lesson 13 – Chart Supplements

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of the Chart Supplement and its major sections, and information available.

The following topics are taught in this lesson:

1. **Chart Supplement Organization & Legend**
2. **General Airport Information**
3. **Airport & Airspace Hours Of Operation**
4. **Runway Information**
5. **Traffic Pattern Information**
6. **Airport Lighting**
7. **Airport Diagrams**
8. **Associated Data**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.4.5 Lesson 14 – Airspace Classes

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.7 hours

Objective: The objective of this lesson is to learn the basic overview of the various classes of airspace and its general dimensions rules and regulations within each class of airspace. Additionally, various corridors, transition routes and airways will be discussed, as will towered airports in uncontrolled airspace.

The following topics are taught in this lesson:

1. **Class A Airspace**
2. **Class B Airspace**
3. **Class C Airspace**
4. **Class D Airspace**
5. **Class E Airspace**
6. **Class G Airspace**
7. **Corridors, Flyways, And Transition Routes**
8. **Federal Airways**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.4.6 Lesson 15 – Transponder & ADS-B

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of Air Traffic Control Services available and Primary Radar. Transponders, ADS-B, and the principles of operation, regulations and inspections will also be discussed.

The following topics are taught in this lesson:

1. **Air Traffic Control Services**
2. **Primary Radar**
3. **Transponder Principles of Operation**
4. **Transponder Codes**
5. **Transponder Operation**
6. **Transponder Airspace**
7. **Transponder Inspections**
8. **ADS-B Requirements**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.4.7 Lesson 16 – Special Use Airspace

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Special use airspace.

The following topics are taught in this lesson:

1. **Prohibited Areas**
2. **Restricted Areas**
3. **Warning Areas**
4. **Military Operations Areas**
5. **Alert Areas**
6. **Controlled Firing Areas**
7. **National Security Areas**
8. **Other Special User Airspace**
9. **Obtaining Special Use Airspace Information**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.4.8 Lesson 17 – Other Airspace

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of airspace classified as other and its various regulations and requirements.

The following topics are taught in this lesson:

1. **Military Training Routes**
2. **Air Defense Identification Zone**
3. **IFR Routes**
4. **Parachute Jump Operations**
5. **Temporary Flight Restrictions**
6. **Wilderness Areas**
7. **Special Air Traffic Rules Areas**
8. **Special Flight Rules Areas**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.4.9 Lesson 18 – NOTAMs

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of NOTAMs and the various types and information of each respective type.

The following topics are taught in this lesson:

1. **NOTAM Types**
2. **NOTAM Decoding**
3. **Distant NOTAM**
4. **Flight Data Center (FDC) NOTAM**
5. **Pointer NOTAM**
6. **Special Activity NOTAM**
7. **Military NOTAM**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.4.10 Block 2 Stage Exam

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 1.0 hour

Objective: The objective of this lesson is to test your knowledge of topics covered in Block 2.

The following topics are included in this exam:

1. **Sectional Charts**
2. **Chart Supplements**
3. **Airspace Classes**
4. **Transponder & ADS-B**
5. **Special Use Airspace**
6. **Other Airspace**
7. **NOTAMs**

Completion Standards: This lesson will be complete when the test is passed with a minimum score of 75%.

5.5 Ground Block 3 – Aviation Weather

5.5.1 Ground Block 3 Objectives

The objective of Block 3 is for the student to learn about the following topics:

1. The Atmosphere
2. Atmospheric Circulation
3. Wind
4. Air Masses And Fronts
5. Atmospheric Stability
6. Precipitation
7. Clouds
8. Fog
9. Wind Shear
10. Microbursts
11. Turbulence
12. Thunderstorms
13. Introduction To Weather Services
14. METARs
15. PIREPs
16. Terminal Aerodrome Forecasts
17. Winds Aloft Forecasts
18. Inflight Aviation Weather Advisories
19. Weather Forecast Charts
20. Weather Analysis Charts

5.5.2 Ground Block 3 Completion Standards

Ground Block 3 is completed when the student has satisfactorily completed all lessons and quizzes, and the Block 3 Stage Exam with a score of 75% or greater.

5.5.3 Lesson 19 – The Atmosphere

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of the Earths Atmosphere and its composition. Atmospheric properties such as temperature, density, and pressure will be also discussed.

The following topics are taught in this lesson:

1. **Atmospheric Composition**
2. **Layers of the Atmosphere**
3. **Temperature**
4. **Effect Of Solar Radiation on Temperature**
5. **Temperature Variations Across Geographic Regions**
6. **Seasonal Temperature Variation**
7. **Effect of Materials on Temperature Changes**
8. **Air Density**
9. **Atmospheric Pressure**
10. **Pressure Vs Altitude**
11. **Temperature Vs. Altitude**
12. **Altitude Measurement**
13. **International Standard Atmosphere**
14. **Non-Standard Temperature**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.4 Lesson 20 – Atmospheric Circulation

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Atmospheric Circulation and the various models/patterns including the Coriolis Force.

The following topics are taught in this lesson:

1. **Basic Atmospheric Circulation Model**
2. **Coriolis Force**
3. **Hadley Cell**
4. **Jet Stream**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.5 Lesson 21 – Wind

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Wind and the factors and forces that influence wind speed and direction. In addition to learning how wind influences flight planning.

The following topics are taught in this lesson:

1. **Pressure Gradient Force**
2. **Effect Of Coriolis Force on Wind**
3. **Cyclonic and Anti-Cyclonic Flows**
4. **Flight Planning Considerations**
5. **Effect Of Surface Friction on Wind Speed and Direction**
6. **Katabatic And Anabatic Winds**
7. **Sea and Land Breezes**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.6 Lesson 22 – Air Masses and Fronts

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of Air Masses and Fronts and various types and stability of them. Frontal interactions and associated weather will also be discussed.

The following topics are taught in this lesson:

1. **Air Masses**
2. **Modification Of Air Masses**
3. **Stability of Air Masses**
4. **Types of Fronts**
5. **Frontolysis And Frontogenesis**
6. **Ridges And Troughs**
7. **Squall Line**
8. **Dry Line**
9. **Occlusions**
10. **Frontal Waves**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.7 Lesson 23 – Atmospheric Stability

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of Atmospheric Stability, Humidity, and Lapse Rates within the atmosphere.

The following topics are taught in this lesson:

1. **Changes Of State**
2. **Supercooled Water**
3. **Relative Humidity**
4. **Dewpoint**
5. **Condensation**
6. **Adiabatic Cooling**
7. **Stability Of Air**
8. **Effect Of Lapse Rate on Stability**
9. **Temperature Inversion**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.8 Lesson 24 – Precipitation

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of Precipitation and its various forms and types.

The following topics are taught in this lesson:

1. **Formation of Precipitation**
2. **Types of Precipitations**
3. **Snow**
4. **Freezing Rain**
5. **Ice Pellets**
6. **Hail**
7. **Virga**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.9 Lesson 25 – Clouds

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Clouds, the various forms and types in addition to learning how to determine the altitude of clous bases.

The following topics are taught in this lesson:

1. **Cloud Forms**
2. **Cloud Altitude Classes**
3. **Lenticular Clouds**
4. **Definition of Ceiling**
5. **Determining Altitude Of A Cloud Base**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.10 Lesson 26 – Fog

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Fog, its various types and its formation.

The following topics are taught in this lesson:

1. **Fog Formation**
2. **Types of Fog**
3. **Visibility**
4. **Haze**
5. **Smoke**
6. **Blowing Obstructions to Vision**
7. **Whiteout**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.11 Lesson 27 – Wind Shear

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of Wind Shear, its effect on performance and triggers as well as alerting systems.

The following topics are taught in this lesson:

1. **Definition of Wind Shear**
2. **Effect of Wind Shear on Performance**
3. **Wind Shear Triggers**
4. **Wind Shear Detection & Avoidance**
5. **Low-Level Wind Shear Alert System**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.12 Lesson 28 – Microbursts

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of Microbursts, the characteristics of Microbursts as well as Microburst avoidance.

The following topics are taught in this lesson:

1. **Microburst Formation**
2. **Microburst Characteristics**
3. **Microburst Recognition**
4. **Microburst Avoidance**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.13 Lesson 29 – Turbulence

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Turbulence, the various types of Turbulence, and the reporting criteria and avoidance of Turbulence.

The following topics are taught in this lesson:

1. **Convective Currents**
2. **Mechanical Turbulence**
3. **Mountain Waves**
4. **Wind Shear Turbulence**
5. **Thunderstorm Turbulence**
6. **Turbulence Reporting Criteria**
7. **Turbulence Avoidance**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.14 Lesson 30 – Thunderstorms

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Thunderstorms and its various types, the stages of Thunderstorm development, associated conditions, and hazards of Thunderstorms.

The following topics are taught in this lesson:

1. **Types of Thunderstorms**
2. **Thunderstorm Stages**
3. **Steady State Thunderstorms**
4. **Air Mass Thunderstorms**
5. **Thunderstorm Turbulence**
6. **Squall Lines**
7. **Tornadoes**
8. **Hail**
9. **Lightning**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.15 Lesson 31 – Introduction to Weather Services

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Aviation Weather services available, the various types of briefings, and weather information sources.

The following topics are taught in this lesson:

1. **Flight Service Stations**
2. **Weather Briefings**
3. **Self-Briefing**
4. **AviationWeather.gov**
5. **Airport Weather Sources**
6. **Automated Terminal Information Service (ATIS)**
7. **Flight Categories**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.16 Lesson 32 – METARs

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of a METAR, including its formatting and decoding.

The following topics are taught in this lesson:

1. **METAR Format**
2. **METAR Decoding**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.17 Lesson 33 – PIREPs

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of a PIREP, including its formatting and decoding.

The following topics are taught in this lesson:

1. **PIREP Format**
2. **PIREP Decoding**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.18 Lesson 34 – Terminal Aerodrome Forecasts

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of a Terminal Aerodrome Forecast, including its formatting and decoding, as well as discussing Area Forecasts.

The following topics are taught in this lesson:

1. **TAF Format**
2. **TAF Decoding**
3. **Area Forecast (FA)**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.19 Lesson 35 – Winds Aloft Forecasts

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Winds Aloft Forecasts, including its formatting and decoding.

The following topics are taught in this lesson:

1. **Winds Aloft Forecast Format**
2. **Winds Aloft Forecast Decoding**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.20 Lesson 36 – Inflight Aviation Weather Advisories

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of the typical Inflight Aviation Weather Advisories and their associated criteria and phenomena.

The following topics are taught in this lesson:

1. **Inflight Aviation Weather Advisories**
2. **SIGMET**
3. **Convective SIGMET**
4. **AIRMET**
5. **Center Weather Advisory (CWA)**
6. **Aviation Watch Notification Messages (SAW)**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.21 Lesson 37 – Weather Forecast Charts

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Aviation weather Charts, the information included in the respective charts and valid/issue times for the Charts.

The following topics are taught in this lesson:

1. **Types and Usage of Prognostic Charts**
2. **Significant Weather Prognostic Chart**
3. **Short-Range Surface Prognostic Chart**
4. **Surface Analysis Chart**
5. **Graphical Forecast for Aviation**
6. **Convective Outlook Chart**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.22 Lesson 38 – Weather Analysis Charts

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of Weather Analysis Charts, the information included valid/issue times for the Charts.

The following topics are taught in this lesson:

1. **Station Model**
2. **Wind Barb**
3. **Surface Analysis Chart**
4. **Constant Pressure Analysis Chart**
5. **Ceiling And Visibility Analysis (CVA)**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.5.23 Block 3 Stage Exam

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 1.0 hour

Objective: The objective of this lesson is to test your knowledge of topics covered in Block 3.

The following topics are included in this exam:

1. **The Atmosphere**
2. **Atmospheric Circulation**
3. **Wind**
4. **Air Masses and Fronts**
5. **Atmospheric Stability**
6. **Precipitation**
7. **Clouds**
8. **Fog**
9. **Wind Shear**
10. **Microbursts**
11. **Turbulence**
12. **Introduction to Weather Services**
13. **METARs**
14. **PIREPs**
15. **Terminal Aerodrome Forecasts**
16. **Winds Aloft Forecasts**
17. **Inflight Aviation Weather Advisories**
18. **Weather Forecast Charts**
19. **Weather Analysis Charts**

Completion Standards: This lesson will be complete when the test is passed with a minimum score of 75%.

5.6 Ground Block 4 – Flight Theory

5.6.1 Ground Block 4 Objectives

The objective of Block 4 is for the student to learn about the following topics:

1. Principles Of Flight
2. Aerodynamics
3. Airplane Stability And Control
4. Flight Controls
5. Density Altitude
6. Stalls And Spins

5.6.2 Ground Block 4 Completion Standards

Ground Block 4 is completed when the student has satisfactorily completed all lessons and quizzes, and the Block 4 Stage Exam with a score of 75% or greater.

5.6.3 Lesson 39 – Principles of Flight

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of the principles of flight including the properties of air, theories of lift, Newtons laws of motion, Bernoulli's principles, and lift generation. Additionally, Airfoil shapes and capabilities, the lift equation, drag, the boundary layer, and stalls will also be discussed.

The following topics are taught in this lesson:

1. **Properties Of Air**
2. **Theories Of Lift**
3. **Newton's Laws of Motion**
4. **Bernoulli's Principle of Differential Pressure**
5. **Generation Of Lift**
6. **Lift Distribution**
7. **Airfoil Shape Vs Lift Capability**
8. **Lift Equation**
9. **Induced Drag**
10. **Boundary Layer**
11. **Stalls**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.6.4 Lesson 40 – Aerodynamics

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.6 hours

Objective: The objective of this lesson is to learn the basic overview of aerodynamics including the forces on an aircraft, types of drag, lift to drag ratios, angle of climb and rate of climb, slips and skids rate and radius of turn. Load factor, the effect of load factor on stall speed, maneuvering speed, VG diagram, and ground effect will also be discussed.

The following topics are taught in this lesson:

1. **Forces On an Aircraft**
2. **Types of Drag**
3. **Lift To Drag Ratio**
4. **Angle And Rate of Climb**
5. **Slips and Skids**
6. **Rate And Radius of Turn**
7. **Load Factor**
8. **Aircraft Certification Categories**
9. **Effect Of Load Factor on Stall Speed**
10. **Maneuvering Speed**
11. **Vg Diagram**
12. **Ground Effect**
13. **High Speed Flight**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.6.5 Lesson 41 – Airplane Stability and Control

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.5 hours

Objective: The objective of this lesson is to learn the basic overview of Airplane Stability and Control and the various types of stability and wing design features that effect airplane stability.

The following topics are taught in this lesson:

1. **Airplane Axes**
2. **Controllability And Maneuverability**
3. **Static Stability**
4. **Dynamic Stability**
5. **Longitudinal Stability**
6. **Thrust Line**
7. **Phugoid Oscillations**
8. **Lateral Stability**
9. **Directional Stability**
10. **Spiral Instability**
11. **Dutch Roll**
12. **Wing Planform & Sweep**
13. **Taper Ratio**
14. **Aspect Ratio**
15. **Wing Twist**
16. **Effects Of Loading Changes on Stability and Control**
17. **Effect Of Power Changes on Stability and Control**
18. **Turning Tendencies**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.6.6 Lesson 42 – Flight Controls

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of Primary and Secondary flight controls, servo and anti-servo tabs, spoilers, and leading-edge devices.

The following topics are taught in this lesson:

1. **Primary Flight Controls**
2. **Secondary Flight Controls**
3. **Flap Types**
4. **Trim Tabs**
5. **Servo and Anti-Servo Tabs**
6. **Spoilers**
7. **Leading Edge Devices**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.6.7 Lesson 43 – Density Altitude

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of air density and pressure, the effects of density on lift and power output, and the effect on performance.

The following topics are taught in this lesson:

1. **Air Density**
2. **Factors Affecting Air Density**
3. **Effect Of Air Density on Lift**
4. **Effect Of Air Density on Power Output**
5. **Climb Performance**
6. **Takeoff Performance**
7. **Cruise Performance**
8. **Calculating Density Altitude**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.6.8 Lesson 44 – Stalls and Spins

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of the various types of stalls, stall speed vs altitude, stall recognition and recovery, and the effect of CG location and wing

The following topics are taught in this lesson:

1. **Definition Of a Stall**
2. **Stall Speed**
3. **Stall Speed Vs Altitude**
4. **Stall Recognition and Recovery**
5. **Types of Stalls**
6. **Effect of Wing Contamination on Stall Speed**
7. **Effect Of CG Location on Stall Behavior**
8. **Effect Of Wing Planform on Stall Behavior**
9. **Wing Twist and Incidence**
10. **Spins**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.6.9 Block 4 Stage Exam

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 1.0 hour

Objective: The objective of this lesson is to test your knowledge of topics covered in Block 4.

The following topics are included in this exam:

1. **Principles of Flight**
2. **Aerodynamics**
3. **Airplane Stability and Control**
4. **Flight Controls**
5. **Density Altitude**
6. **Stalls and Spins**

Completion Standards: This lesson will be complete when the test is passed with a minimum score of 75%.

5.7 Ground Block 5 – Aeronautical Knowledge

5.7.1 Ground Block 5 Objectives

The objective of Block 5 is for the student to learn about the following topics:

1. Flight Rules (VFR)
2. VFR Weather Minimums
3. NTSB Regulations
4. Pilot Certification
5. Medical Certification
6. Airplane Performance
7. Weight And Balance
8. Health And Physiological Factors
9. Aeronautical Decision Making
10. Aircraft Documents
11. Maintenance And Inspections
12. Aircraft Equipment (VFR)

5.7.2 Ground Block 5 Completion Standards

Ground Block 5 is completed when the student has satisfactorily completed all lessons and quizzes, and the Block 5 Stage Exam with a score of 75% or greater.

5.7.3 Lesson 45 – Flight Rules (VFR)

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.6 hours

Objective: The objective of this lesson is to learn the basic overview of the Federal Aviation Regulations applicable to VFR Flight.

The following topics are taught in this lesson:

1. **Regulatory Scheme**
2. **Accessing Federal Aviation Regulations**
3. **FAA Rulemaking Process**
4. **Special Federal Aviation Regulations**
5. **Applicability of FARs In Foreign Airspace**
6. **Maximum Speed**
7. **Minimum Altitude**
8. **Dropping of Objects**
9. **Aerobatic Flight**
10. **Parachutes**
11. **Formation Flight**
12. **Safety Belts**
13. **Other FARs Applicable to VFR Operations**
14. **Advisory Circulars**
15. **Aeronautical Information Manual**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.4 Lesson 46 – VFR Weather Minimums

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of the Weather Minimums applicable to VFR flight.

The following topics are taught in this lesson:

1. **Weather Minimums**
2. **Flight And Ground Visibility**
3. **Special VFR**
4. **VFR Over-The-Top**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.5 Lesson 47 – NTSB Regulations

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of NTSB regulations regarding incidents, accidents, and reporting.

The following topics are taught in this lesson:

1. **Role of the NTSB**
2. **NTSB Definitions**
3. **Notification Of Incidents and Accidents**
4. **Reporting Of Incidents and Accidents**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.6 Lesson 48 – Pilot Certification

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of Pilot certification requirements and regulations, including privileges and limitations.

The following topics are taught in this lesson:

1. **Pilot Certification Categories and Classes**
2. **Ratings**
3. **Flight Review & Currency Requirements**
4. **Currency To Carry Passengers**
5. **Compensation & Expense Sharing**
6. **Glider Towing**
7. **Endorsements**
8. **Complex & High-Performance Aircraft**
9. **Tailwheel Aircraft**
10. **Pressurized Aircraft**
11. **Logging Flight Time**
12. **Change Of Address**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.7 Lesson 49 – Medical Certification

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Medical Certification requirements and regulations including BasicMed. The carriage of passengers under the influence of drugs or alcohol, alcohol testing, carriage of drugs and narcotics, and reporting of motor vehicle actions or criminal offenses will also be discussed.

The following topics are taught in this lesson:

1. **Medical Certification**
2. **Disqualifying Medical Conditions**
3. **BasicMed**
4. **Medications**
5. **Alcohol**
6. **Passengers Under the Influence of Drugs Or Alcohol**
7. **Alcohol Testing**
8. **Reporting Of Motor Vehicle Actions**
9. **Reporting Of Criminal Offenses**
10. **Carriage Of Drugs and Narcotics**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.8 Lesson 50 – Airplane Performance

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.8 hours

Objective: The objective of this lesson is to learn the basic overview of airplane performance and the calculation of performance figures including the usages of various methods of calculation, factors affecting performance.

The following topics are taught in this lesson:

1. **Performance Charts**
2. **Mathematical Order of Operations**
3. **Interpolation**
4. **Effect Of Air Density on Performance**
5. **Density Altitude**
6. **Calculating Density Altitude**
7. **Headwind And Crosswind Components**
8. **Use Of Performance Tables**
9. **Use Of Performance Graphs**
10. **Takeoff Performance**
11. **Landing Performance**
12. **Factors Affecting Takeoff and Landing Performance**
13. **Hydroplaning**
14. **Climb Performance**
15. **Enroute Climb**
16. **Factors Affecting Climb Performance**
17. **Cruise Performance**
18. **Range And Endurance**
19. **Glide Performance**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.9 Lesson 51 – Weight and Balance

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.5 hours

Objective: The objective of this lesson is to learn the basic overview of weight and balance and CG calculations including the various methods available to perform calculations.

The following topics are taught in this lesson:

1. **Weight and Balance Terms and Definitions**
2. **Effects Of Adverse Loading**
3. **Mean Aerodynamic Chord (MAC)**
4. **Lever Law**
5. **Finding the Center of Gravity**
6. **Calculating Weight and Balance**
7. **Effect of Weight Shift**
8. **Correcting Adverse Balance**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.10 Lesson 52 – Health and Physiological Factors

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.6 hours

Objective: The objective of this lesson is to learn the basic overview of Health and Physiological Factors, the causes, symptoms, and remedies to each respective factor.

The following topics are taught in this lesson:

1. **Hyperventilation**
2. **Hypoxia**
3. **Sinus Blockage**
4. **Middle Ear Blockage**
5. **Motion Sickness**
6. **Carbon Monoxide**
7. **Dehydration**
8. **Decompression Sickness**
9. **Spatial Disorientation**
10. **Vestibular Illusions**
11. **Visual Illusions**
12. **Preventing Errors Due to Visual Illusions**
13. **Sleep**
14. **Circadian Rhythm**
15. **Chronic and Acute Stress**
16. **Stress Management**
17. **Fatigue**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.11 Lesson 53 – Aeronautical Decision Making

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of Aeronautical Decision Making and the various process and models available for sound decision making and judgment including hazardous attitudes and risk assessment and management.

The following topics are taught in this lesson:

1. **Human Factors in Aviation Accidents**
2. **Judgment**
3. **Complacency**
4. **Effect of Stress & Fatigue on Decision-Making**
5. **Decision-Making Process & Models**
6. **Perceive, Process, Perform (3P) Model**
7. **DECIDE Model**
8. **PAVE Checklist**
9. **Hazardous Attitudes**
10. **Risk Assessment & Management**
11. **Crew Resource Management**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.12 Lesson 54 – Aircraft Documents

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of the required aircraft documents.

The following topics are taught in this lesson:

1. **Required Documents**
2. **Operating Limitations**
3. **Airworthiness Certificate**
4. **Certification Categories and Classes**
5. **Airworthiness Categories**
6. **Special Airworthiness Certificate**
7. **Radiotelephone License**
8. **Aircraft Registration**
9. **Weight & Balance Information**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.13 Lesson 55 – Maintenance and Inspections

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of required aircraft maintenance and inspections, and their respective durations.

The following topics are taught in this lesson:

1. **Airworthiness Requirements**
2. **Aircraft Logbooks**
3. **Persons Authorized to Perform Maintenance**
4. **Preventive Maintenance**
5. **Aircraft Inspections**
6. **Transponder Inspection**
7. **Pitot-Static System Inspection**
8. **Annual Inspection**
9. **100-Hour Inspection**
10. **ELT Inspection**
11. **Airworthiness Directives**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.14 Lesson 56 – Aircraft Equipment (VFR)

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of the equipment required for flight in VFR conditions during day and nighttime.

The following topics are taught in this lesson:

1. **Day & Night VFR Equipment**
2. **Emergency & Flotation Devices**
3. **Distance Measuring Equipment**
4. **Emergency Locator Transmitter**
5. **Inoperative Equipment**
6. **Minimum Equipment List**
7. **Special Flight Permit**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.7.15 Block 5 Stage Exam

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 1.0 hour

Objective: The objective of this lesson is to test your knowledge of topics covered in Block 5.

The following topics are included in this exam:

1. **Flight Rules (VFR)**
2. **VFR Weather Minimums**
3. **NTSB Regulations**
4. **Pilot Certification**
5. **Medical Certification**
6. **Airplane Performance**
7. **Weight and Balance**
8. **Health and Physiological Factors**
9. **Aeronautical Decision Making**
10. **Aircraft Documents**
11. **Maintenance and Inspections**
12. **Aircraft Equipment (VFR)**

Completion Standards: This lesson will be complete when the test is passed with a minimum score of 75%.

5.8 Ground Block 6 – Flight Operations

5.8.1 Ground Block 6 Objectives

The objective of Block 6 is for the student to learn about the following topics:

1. Runways And Taxiways
2. Airport Signs
3. Airport Lighting
4. Visual Glideslope Indicators
5. Radio Communications
6. Ground Operations
7. Traffic Pattern Operations
8. Night Operations
9. Private Pilot Maneuvers
10. Collision Avoidance
11. Cold Weather Operations
12. Land And Hold Short Operations
13. Wake Turbulence Avoidance
14. Pilotage & Dead Reckoning
15. Cross-Country Flight Planning (VFR)
16. VOR Navigation
17. GPS Navigation
18. Abnormal And Emergency Procedures
19. Loss Of Communications (VFR)

5.8.2 Ground Block 6 Completion Standards

Ground Block 6 is completed when the student has satisfactorily completed all lessons and quizzes, and the Block 6 Stage Exam with a score of 75% or greater.

5.8.3 Lesson 57 – Runways and Taxiways

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of runways and taxiways including markings and diagrams.

The following topics are taught in this lesson:

1. **Movement vs Non-Movement Area**
2. **Taxiways**
3. **ILS Critical Area Markings**
4. **Holding Position Markings**
5. **Roadways**
6. **Runway Designation**
7. **Runway Types**
8. **Closed Runways And Taxiways**
9. **Blast Pads (Stopways)**
10. **Displaced Threshold**
11. **Demarcation Bar**
12. **Airport Diagram**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.4 Lesson 58 – Airport Signs

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of airport signage, the various types of signage and the significance of each.

The following topics are taught in this lesson:

1. **Mandatory Instruction Signs**
2. **Location Signs**
3. **Direction Signs**
4. **Information Signs**
5. **Runway Distance Remaining Signs**
6. **Destination Signs**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.5 Lesson 59 – Airport Lighting

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of airport lighting including the various types and color significance.

The following topics are taught in this lesson:

1. **Airport Beacons**
2. **Obstruction Lights**
3. **Runway & Taxiway Lighting**
4. **Runway End Identifier Lights**
5. **Precision Runway Lighting**
6. **Pilot-Controlled Lighting**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.6 Lesson 60 – Visual Glideslope Indicators

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of the various types of visual glideslope indicators and the significance of the various colors and strobe patterns.

The following topics are taught in this lesson:

1. **Visual Approach Slope Indicator (VASI)**
2. **Three-Bar VASI**
3. **Precision Approach Path Indicator (PAPI)**
4. **Pulsating Approach Path Indicator**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.7 Lesson 61 – Radio Communications

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of radio communications including FCC radio license requirements, the phonetic alphabet, callsigns, and radio phraseology.

The following topics are taught in this lesson:

1. **Communications Equipment**
2. **FCC Radio License**
3. **Phonetic Alphabet**
4. **Use of Call Signs**
5. **Radio Phraseology**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.8 Lesson 62 – Ground Operations

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.4 hours

Objective: The objective of this lesson is to learn the basic overview of ground operations including the usage of checklists, preflight checks, airport diagrams, parking and post flight checks.

The following topics are taught in this lesson:

1. **Use Of Checklists**
2. **Aircraft Preflight**
3. **ATIS & Weather Information**
4. **Engine Starting**
5. **Taxi Clearance & Procedure**
6. **Runway Incursion Avoidance**
7. **Positioning Flight Controls During Taxi**
8. **Takeoff Clearance**
9. **After Landing**
10. **Parking**
11. **Post-Flight Procedures**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.9 Lesson 63 – Traffic Pattern Operations

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.5 hours

Objective: The objective of this lesson is to learn the basic overview of traffic pattern operations including procedures at towered and non-towered airports.

The following topics are taught in this lesson:

1. **The Traffic Pattern**
2. **Segmented Circle**
3. **Wind Direction Indicators**
4. **Towered Vs Non-Towered Airports**
5. **Part Time Control Towers**
6. **Towered Airport Procedure**
7. **Non-Towered Airport Procedure**
8. **Use of Visual References During Landing**
9. **Short and Soft Field Operations**
10. **Forward Slips**
11. **Crosswind Takeoff and Landing**
12. **Landing In Gusty Conditions**
13. **Common Landing Errors**
14. **Reject Landing**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.10 Lesson 64 – Night Operations

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of night operations including the strengths and limitations of night vision and night illusions.

The following topics are taught in this lesson:

1. **Definition Of Night**
2. **Airplane Lighting Requirements**
3. **Operations In Non-Movement Area**
4. **Night Vision Physiology**
5. **Dark Adaptation**
6. **Night Illusions**
7. **Landing At Night**
8. **Inadvertent IMC At Night**
9. **Night Operations Over Water**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.11 Lesson 65 – Private Pilot Maneuvers

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Private Pilot maneuvers and the performance standards, common errors, and purpose of each maneuver.

The following topics are taught in this lesson:

1. **Effect of Wind on Ground Track**
2. **Groundspeed**
3. **Rate and Radius of Turn**
4. **Rectangular Course**
5. **Turns Around a Point**
6. **S Turns Across a Road**
7. **Steep Turns**
8. **Slow Flight**
9. **Positive Exchange of Flight Controls**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.12 Lesson 66 – Collision Avoidance

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of collision avoidance and the right of way rules including the usage of clearing turns, aircraft lighting, and proper scanning techniques.

The following topics are taught in this lesson:

1. **Right Of Way Rules**
2. **Clearing Turns**
3. **Collision Avoidance Methods**
4. **ATC Traffic Advisories**
5. **Collision Avoidance in Airways**
6. **Scanning For Traffic**
7. **Evaluating Possible Threats**
8. **Collision Avoidance at Night**
9. **Near Midair Collision (NMAC) Reporting Program**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.13 Lesson 67 – Cold Weather Operations

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of cold weather operations, including ice formation and the various forms of icing conditions and ice, determining the freezing level, and aircraft deicing equipment.

The following topics are taught in this lesson:

1. **Supercooled Water**
2. **Types Of Airframe Ice**
3. **Detection & Avoidance Of Icing Conditions**
4. **Freezing Rain**
5. **Frost**
6. **Freezing Level**
7. **Aircraft Preflighting in Cold Weather**
8. **Deicing Systems**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.14 Lesson 68 – Land and Hold Short Operations

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of Land and Hold Short operations and the pilot consideration, authority and responsibility while performing LAHSO.

The following topics are taught in this lesson:

1. **Land And Hold Short Operations**
2. **LAHSO At Non-Intersecting Runways**
3. **LAHSO Clearances**
4. **Weather Requirements**
5. **PIC Authority**
6. **Performance Planning**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.15 Lesson 69 – Wake Turbulence Avoidance

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of Wake Turbulence, including generation, avoidance, wind effect, and separation requirements.

The following topics are taught in this lesson:

1. **Generation Of Wake Turbulence**
2. **Induced Roll**
3. **Helicopter Wake Turbulence**
4. **Wake Turbulence Avoidance**
5. **Wind Effect on Vortices**
6. **ATC Separation Requirements**
7. **Large Aircraft Considerations**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.16 Lesson 70 – Pilotage & Dead Reckoning

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.6 hours

Objective: The objective of this lesson is to learn the basic overview of pilotage and dead reckoning, including the usage of plotters and flight computers.

The following topics are taught in this lesson:

1. **Pilotage**
2. **Dead Reckoning**
3. **Plotter**
4. **Flight Computer**
5. **Distance**
6. **True Course**
7. **Heading And Groundspeed**
8. **Variation**
9. **Magnetic Heading**
10. **Compass Heading**
11. **Basic Navigation Calculations**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.17 Lesson 71 – Cross-Country Flight Planning (VFR)

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.8 hours

Objective: The objective of this lesson is to learn the basic overview of VFR cross-country flight planning and the various considerations, usage of a navigation log, the FAA Flight plan, ICAO flight plan form.

The following topics are taught in this lesson:

1. **Preflight Planning**
2. **Selecting A Route and Altitude**
3. **VFR Cruising Altitudes**
4. **Supplemental Oxygen**
5. **Fuel Planning**
6. **Completing the Navigation Log**
7. **FAA Flight Plan**
8. **ICAO Flight Plan Form**
9. **Executing The Cross Country**
10. **Closing The Flight Plan**
11. **Time Zones**
12. **Incorporating Changes During The Flight**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.18 Lesson 72 – VOR Navigation

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.7 hours

Objective: The objective of this lesson is to learn the basic overview of VOR Navigation including the operating principles, types, usage, identification, of VORs.

The following topics are taught in this lesson:

1. **VOR Operating Principles**
2. **Types Of VOR Stations**
3. **VOR Frequencies**
4. **Identifying A VOR Station**
5. **VOR Compass Rose**
6. **VOR Service Volumes**
7. **Unmonitored VORs (MON)**
8. **Course Deviation Indicator (CDI)**
9. **Determine VOR Radial**
10. **Determine Present Position**
11. **Determine Course to The Station**
12. **Intercepting and Tracking a VOR Course**
13. **Wind Correction**
14. **Normal And Reverse Sensing**
15. **Unreliable VOR Signals**
16. **Cone Of Confusion**
17. **Absence Of TO-FROM Indication**
18. **Distance Measuring Equipment (DME)**
19. **VOR Accuracy Check**
20. **Radio Magnetic Indicator (RMI)**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.19 Lesson 73 – GPS Navigation

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of GPS navigation including the forms of navigation and precision enhancing systems.

The following topics are taught in this lesson:

1. **Area Navigation (RNAV)**
2. **Global Positioning System (GPS)**
3. **Receiver Autonomous Integrity Monitoring (RAIM)**
4. **Wide Area Augmentation System**
5. **GPS Technical Standard Orders (TSO)**
6. **GPS CDI Sensitivity**
7. **GPS VFR Waypoints**
8. **VOR Minimum Operational Network (MON)**
9. **Use of GPS for VFR Operations**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.20 Lesson 74 – Abnormal and Emergency Procedures

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.3 hours

Objective: The objective of this lesson is to learn the basic overview of the various types of abnormalities and emergencies including the regulatory considerations and safety reporting.

The following topics are taught in this lesson:

1. **Abnormality Vs. Emergency**
2. **Deviation From Regulations in An Emergency**
3. **Engine Failure**
4. **Minimum Fuel**
5. **Lost Procedure**
6. **Diversion**
7. **Recovery From Unusual Flight Attitudes**
8. **Aviation Safety Reporting Program (ASRS)**
9. **Near Midair Collision Reporting (NMAC)**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.21 Lesson 75 – Loss of Communications (VFR)

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 0.2 hours

Objective: The objective of this lesson is to learn the basic overview of Loss of Communications and light gun signals.

The following topics are taught in this lesson:

1. **Lost Communications Procedures**
2. **Light Gun Signals**

Completion Standards: This lesson will be complete when all activities and knowledge checks are satisfactorily complete, and the end of lesson quiz is passed with a minimum score of 70%.

5.8.22 Block 6 Stage Exam

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 1.0 hour

Objective: The objective of this lesson is to test your knowledge of topics covered in Block 6.

The following topics are included in this exam:

1. **Runways and Taxiways**
2. **Airport Signs**
3. **Airport Lighting**
4. **Visual Glideslope Indicators**
5. **Radio Communications**
6. **Ground Operations**
7. **Traffic Pattern Operations**
8. **Night Operations**
9. **Private Pilot Maneuvers**
10. **Collision Avoidance**
11. **Cold Weather Operations**
12. **Land and Hold Short Operations**
13. **Wake Turbulence Avoidance**
14. **Pilotage & Dead Reckoning**
15. **Cross-Country Flight Planning (VFR)**
16. **VOR Navigation**
17. **GPS Navigation**
18. **Abnormal and Emergency Procedures**
19. **Loss of Communications (VFR)**

Completion Standards: This lesson will be complete when the test is passed with a minimum score of 75%.

5.9 Final Requirements

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 2.0 hours

Objective: The objective is to meet the minimum course time of 35 hours and complete 5 simulated FAA exams. The simulated FAA exams can only be accessed after all lessons and tests have been satisfactorily completed.

Completion Standards: Final requirements will be met when (1) a minimum course time of 35 hours has been achieved and (2) 5 simulated FAA exams have been passed with an average score of 90% with no score below 80% as indicated below:

1. **Meet the minimum course time of 35 hours**
    a. Time spent reviewing completed activities, completing Study sessions, taking simulated FAA Exams, and studying Flashcards counts towards the minimum time
2. **Complete 5 simulated FAA exams**
    a. You must score an average of 90% on 5 simulated FAA exams, with no score below 80%

5.10 End of Course Test

Training Method: Computer-Based Training (CAE Classroom iOS App)

Approximate Duration: 2.0 hours

Objective: The Chief Instructor, Assistant Chief Instructor, or authorized Check Instructor will authorize you to complete this test. The objective of this test is to test your knowledge of topics covered in Blocks 1 through 6.

Completion Standards: This lesson will be complete when the test is passed with a minimum score of 75%. The end of course test is unlocked after the Final Requirements have been met.
Content: This exam will cover topics included in lessons 1 through 75.