GFD Instrument/Commercial Syllabus - Amendment 1

(Amendment to item 10001785 in print, and item 10464411 in e-Book)

GFD Instrument/Commercial Syllabus Amendment 1 Description

Effective August 27, 2018, the FAA established amendments to FAR 61.129 (a)(3)(ii) and FAR Part 141 Appendix D for commercial pilot certification. These amendments allow for 10 hours of training time in a technically advanced airplane (TAA) in lieu of 10 hours of training in an airplane that has retractable landing gear, flaps, and a controllable pitch propeller, or is turbine-powered. A TAA is defined as an airplane equipped with an electronically advanced avionics system. At a minimum, this system must include the following:

- A primary flight display (PFD) with an airspeed indicator, turn coordinator, attitude indicator, heading indicator, altimeter, and vertical speed indicator;
- A multifunction display (MFD) with a moving map using GPS navigation to display the aircraft position;
- A two-axis autopilot integrated with the navigation and heading guidance system.

Jeppesen is in the process of making significant updates to the *Instrument/Commercial Syllabus*, item 10001785 in print, and item 10464411 in e-book. These updates will include a TAA option, in addition to several other improvements to enhance usability. Because the final publishing of the print/e-Book is not yet determined, Jeppesen is posting Amendment 1 as an interim solution for TAA options within the Commercial Pilot Certification course. Amendment 1 is not applicable for operations not using TAAs during commercial flight training. For TAA operators, the lessons provided in Amendment 1 replace existing complex airplane lessons and flight time in the current syllabus and can be presented as an amendment to the syllabus for approval by the FSDO. Reference the "*Jeppesen Commercial Pilot Syllabus Amendment 1 for TAA.pdf"* for the following updates:

Preface

The Preface includes a description of the TAA option and a checkbox to indicate that the operator will be using TAA transition lessons in place of, or combined with, the complex airplane transition lessons.

Courses Overview

- The Curriculum Overview for the Commercial Pilot Certification Course indicates "Complex or TAA" in the Flight Training requirements table.
- The Allocation Tables for Stages V and VI of the Commercial Pilot Certification Course indicate the lessons that may be conducted in a complex airplane or TAA.

Commercial Pilot Flight Training Stage V TAA Option

This new section provides the TAA lessons that may be used in lieu of the complex airplane lessons in Stage V. Lessons 46, 47, 48, 49, 50, 66, and 67 include objectives, tasks, and completion standards that apply to a TAA transition.

Commercial Pilot Flight Training Stage VI TAA Option

This new section provides the TAA lessons that may be used in lieu of the complex airplane lessons in Stage VI. Lessons 78, 82, and 83 include objectives, tasks, and completion standards that apply to a TAA transition.

Appendix – Pilot Briefing Questions

A new Complex Airplane/TAA Transition Briefing includes question that may be used to demonstrate understanding of the systems and procedures that apply to a complex airplane, TAA, or both.

The charts, tables, and graphs used in this publication are for illustration purposes only and cannot be used for navigation or to determine actual aircraft performance.

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Preface

The *Instrument/Commercial Syllabus* has been specifically developed to meet the requirements of Title 14 CFR, Part 141, Appendices C, D, and I, which apply to Instrument Rating, Commercial Pilot Certification, and Aircraft Class Rating Courses, respectively. The syllabus refers to specific 14 CFR parts and regulations as Federal Aviation Regulations (FARs). It is important that instructors refer to the pertinent sections of the regulations during the conduct of the course. This will ensure that all aeronautical knowledge areas, flight proficiency, and experience requirements have been included during training and are documented in appropriate records. The terminology for maneuvers and procedures listed in the syllabus is aligned with the "tasks" which are published in applicable FAA Airman Certification Standards.

The syllabus is arranged with separate ground and flight training segments which are taught concurrently. The Ground Training Syllabus is divided into five stages. Stages I, II, and III are for the instrument rating (airplane), and Stages IV and V are for commercial pilot (airplane single-engine). Stage VI of the Ground Training Syllabus is for the multi-engine rating. The Flight Training Syllabus includes Stages I, II, and III for the instrument rating and Stages IV, V, and VI for commercial pilot (airplane single-engine). Stage VII of the Flight Training Syllabus is for the multi-engine rating.

Computer-assisted training is incorporated into this syllabus to introduce concepts and enhance skills. The use of an aviation training device (ATD) is recommended for specified ground lessons and for use during flight lessons in the Instrument Course. This syllabus also contains provisions for use of a flight simulator or flight training device for instrument flight training. In the Commercial Course, provisions for a multi-engine rating are also included. Operators who wish to utilize these options should check the appropriate box(es) when they apply for Training Course Outline (TCO) approval. The student copy of the syllabus also should be marked accordingly.

❑ **This syllabus utilizes an ATD in the ground and flight training segments of the Instrument Rating Course.**

❑ **This syllabus utilizes a flight simulator or a flight training device for the flight training segments of the Instrument Rating Course.**

The commercial course requires 10 hours of training in one of the following airplanes:

- Turbine-powered
- A complex airplane—an airplane that has:
  - ◊ Retractable landing gear;
  - ◊ Flaps;
  - ◊ Controllable pitch propeller or FADEC.
- Technically advanced airplane (TAA)—an airplane that has:
  - ◊ A primary flight display (PFD) with an airspeed indicator, turn coordinator, attitude indicator, heading indicator, altimeter, and vertical speed indicator;
  - ◊ A multifunction display (MFD) with a moving map using GPS navigation to display the aircraft position;
  - ◊ A two-axis autopilot integrated with the navigation and heading guidance system.

The Commercial Pilot Certification Course included in this syllabus provides flight lessons that cover a transition to a complex airplane or to a TAA. If operators want to incorporate the TAA transition lessons in place of, or combined with, the complex airplane transition lessons, they should check the appropriate box below. In cases where the student has already accomplished 10 hours of training in a TAA and does not require a TAA transition, these lessons may be conducted as review and to introduce commercial maneuvers in the TAA.

❑ **This syllabus utilizes a TAA for one or more of the Stage V flight lessons 46, 47, 48, 49, 50, 66, and 67 and Stage VI flight lessons 78, 82, and 83 of the Commercial Pilot Certification Course.**

Students possessing a private pilot certificate who want to obtain a commercial pilot certificate may enroll in the Instrument/Commercial Courses concurrently. Private pilots wanting to pursue only the instrument rating (airplane) may do so by completing Stages I, II, and III of the syllabus. In addition, students who possess a private pilot certificate with an instrument rating may pursue a commercial pilot certificate by completing Flight Stages IV, V, and VI of the syllabus for the single-engine rating and then continuing on through the multi-engine training in Stage VII to obtain a multi-engine rating. Students may begin the appropriate courses provided the school determines they meet the prerequisite knowledge, experience, and proficiency requirements for that rating or certificate. The stages a student must complete for the various courses are indicated below.

_____ is enrolled in the:
(Name)

❑ INSTRUMENT RATING COURSE

The student must hold a private pilot certificate and complete all of the instrument ground and flight training lessons in Stages I, II, and III of the *Instrument/Commercial Syllabus.*

❑ INSTRUMENT/COMMERCIAL COURSE

The combined Instrument/Commercial Course requires the student to hold a private pilot certificate and be concurrently enrolled in the Instrument Rating Course and the Commercial Pilot Certification Course. The student must complete all of the ground training lessons in Stages I through V and all of the flight training lessons in Stages I through VI in the *Instrument/Commercial Syllabus*.

MULTI-ENGINE RATING

To add a multi-engine rating to the commercial pilot certificate, the student must complete all of the ground training lessons in Stage VI and all of the flight training lessons in Stage VII of the *Instrument/Commercial Syllabus*.

❑ COMMERCIAL PILOT CERTIFICATION COURSE

The student must hold a private pilot certificate with an instrument rating and complete all of the ground training lessons in Stages IV, and V and all of the flight training lessons in Stages IV, V, and VI of the *Instrument/Commercial Syllabus*.

MULTI-ENGINE RATING

To add a multi-engine rating to the commercial pilot certificate, the student must complete all of the ground training lessons in Stage VI and all of the flight training lessons in Stage VII of the *Instrument/Commercial Syllabus*.

CURRICULUM OVERVIEW
Commercial Pilot Certification Course

Completion of this course is based solely upon compliance with the minimum requirements of FAR Part 141. The time tables are provided for guidance in achieving regulatory compliance.

		GROUND TRAINING			
		Ground Lessons	Stage and End-of-Course Exams	Briefings/ Debriefings	Ground Training Totals
	STAGE IV	9.0	1.0	As Required	10.0
	STAGE V	22.0	3.0	As Required	25.0
COMM'L SINGLE ENGINE →	TOTALS	31.0	4.0	As Required	35.0
MULTI-ENGINE →	STAGE VI	9.0	2.0	4.0	15.0

NOTE: Ground lessons may include class discussion or online lessons.

		FLIGHT TRAINING											
		Dual							Solo				
		Day Local	Day Cross X-C	Night	Complex or TAA	Multi-Engine	Instru-ment	Dual Stage Totals	Day Local	Day Cross X-C	Night	Solo Stage Totals	Dual/ Solo Comb. Totals
	STAGE IV		8.0 (8.0)	5.0 (5.0)			As Required	13.0 (13.0)		34.0*	6.0	40.0	53.0 (53.0)
	STAGE V	20.0 (14.0)			10.0 (7.0)		As Required	20.0 (14.0)	9.0			9.0	29.0 (23.0)
	STAGE VI	20.0 (12.0)	2.0 (1.0)		5.0 (3.0)		As Required	22.0 (13.0)	16.0			16.0	38.0 (29.0)
SINGLE ENGINE →	TOTALS	40.0 (26.0)	10.0 (9.0)	5.0 (5.0)	15.0 (10.0)		As Required	55.0 (40.0)	25.0	34.0*	6.0	65.0	120.0 (105.0)
MULTI-ENGINE →	STAGE VII	(9.0)	(3.0)	(3.0)		(15.0)	As Required	(15.0)					(15.0)
COMBINED →	TOTALS	40.0 (35.0)	10.0 (12.0)	5.0 (8.0)	15.0 (10.0)	(15.0)	As Required	55.0 (55.0)	25.0	34.0*	6.0		120.0 (120.0)

NOTE: 1. * Indicates some solo cross-country hours may be used for additional dual instruction to meet the proficiency requirements for the End-of-Course Flight Check and FAA Commercial Pilot Practical Test.
2. In blocks where two times are shown, the first time is for students taking the Commercial Pilot–Airplane Single-Engine Land Practical Test at the end of Stage VI. If the student chooses to complete the second flight time listed (shown in parentheses) for Flight Stages V and VI, the student must also complete the multi-engine flight training time in Stage VII to meet the total time required for commercial pilot certification. For example, the dual time totals for Stages IV, V, and VI are 55.0 hours for students not completing the multi-engine training and 40 hours for those who will complete the remaining 15 hours in the multi-engine airplane during Flight Stage VII. In each case, the student will receive a minimum of 55.0 hours dual.
3. The 15 hours of flight time in Stage VII are all dual instruction in the multi-engine airplane.
4. Check the applicable box in the Preface to use the Stage V and Stage VI TAA Options–conduct the specified lessons in the Allocation Tables in a TAA in lieu of a complex airplane to meet the hour requirements shown here.

Lesson Time Allocation

Ground Training					Flight Training							
					Dual					Solo		
Ground Lessons	Pilot Briefings	Stage/Final Exams	Exam Debriefings		Day Local	Day Cross-Country	Night	Complex	Instrument	Day Local	Day Cross-Country	Night
Stage IV												
1.5				GL 28 – Airports/Airspace, Meteorology, VFR Charts								
1.5				GL 29 – Pilotage and Dead Reckoning								
	As Req.			Briefing – Cross-Country Procedures (VFR)								
				FL 30 – Day Cross-Country (VFR)		3.0			As Req.			
2.0				GL 30 – Aviation Physiology								
				FL 31 – Night Local			1.0					
2.0				GL 31 – Single-Pilot Resource Management								
				FL 32 – Night Cross-Country			4.0		As Req.			
2.0				GL 32 – Commercial FARs								
				FL 33 – Night Local Solo								1.5
				FL 34 – Night Local Solo								1.5
				FL 35 – Night Cross-Country Solo								3.0
		1.0	As Req.	GL 33 – Stage IV Exam								
				FL 36 – Cross-Country							5.0	
				FL 37 – Cross-Country							5.0	
				FL 38 – Cross-Country							5.0	
				FL 39 – Cross-Country							5.0	
				FL 40 – Cross-Country							5.0	
				FL 41 – Cross-Country							4.0	
				FL 42 – Cross-Country		3.0						
				FL 43 – Long Cross-Country							5.0	
				FL 44 – Stage IV Check		2.0						
9.0	As Req.	1.0	As Req.	Stage Totals		8.0	5.0				34.0	6.0

NOTE: 1. Ground lessons may include class discussion or online lessons.
2. The individual times shown on the Allocation Tables are for instructor/student guidance only; they are not mandatory for each ground lesson, flight lesson, or stage of training. At the completion of this course, the student must meet the minimum requirements of Part 141 for ground and flight training in order to graduate. Preflight and postflight briefings are as required.
3. Flight lessons 36 through 41 are designed for solo or dual flight as necessary to meet the proficiency requirements for the End-of-Course Flight Check and FAA Commercial Pilot Practical Test.

Lesson Time Allocation

Ground Training					Flight Training							
					Dual					Solo		
Ground Lessons	Pilot Briefings	Stage/Final Exams	Exam Debriefings		Day Local	Day Cross-Country	Night	Complex	Instrument	Day Local	Day Cross-Country	Night
Stage V												
				FL 45 – Basic Flight Maneuvers						1.0		
2.0				GL 34 – High Performance Powerplants								
2.0				GL 35 – Environmental and Ice Control Systems								
2.0				GL 36 – Retractable Landing Gear								
	As Req.			Briefing – Complex Airplane/TAA Transition								
				FL 46 – Complex Airplane or TAA	1.0 (1.0)			1.0 (1.0)				
				FL 47 – Complex Airplane or TAA	1.5 (1.0)			1.5 (1.0)	As Req.			
2.0				GL 37 – Advanced Aerodynamics and Accelerated Stalls								
				FL 48 – Complex Airplane or TAA	1.5 (1.0)			1.5 (1.0)	As Req.			
2.0				GL 38 – Predicting Performance								
2.0				GL 39 – Controlling Weight and Balance								
2.0				GL 40 – Maximum Performance Takeoffs and Landings								
				FL 49 – Complex Airplane or TAA	1.5 (1.0)			1.5 (1.0)				
				FL 50 – Complex Airplane or TAA	1.5 (1.0)			1.5 (1.0)				
				FL 51 – Stall/Spin Awareness	1.5 (1.0)							
	As Req.			Briefing – Commercial Flight Maneuvers								
2.0				GL 41 – Steep Turns and Chandelles								
				FL 52 – Steep Turns and Chandelles	1.5 (1.0)							
2.0				GL 42 – Lazy 8s, Pylon 8s, Steep Spirals, and Accuracy Landings								
				FL 53 – Lazy 8s, Pylon 8s, Steep Spirals, and Accuracy Landings	1.5 (1.0)							
				FL 54 – Review Commercial Maneuvers						1.0		
				FL 55 – Review Commercial Maneuvers						1.0		
				FL 56 – Review Commercial Maneuvers						1.0		
				FL 57 – Review Commercial Maneuvers	1.5 (1.0)				As Req.			
2.0				GL 43 – Emergency Procedures								
				FL 58 – Instrument/Commercial Review	1.5 (1.0)				As Req.			
2.0				GL 44 – Commercial Pilot SRM								
				FL 59 – Commercial Maneuvers						1.0		
				FL 60 – Commercial Maneuvers						1.0		
				FL 61 – Commercial Maneuvers						1.0		
				FL 62 – Commercial Maneuvers						1.0		
				FL 63 – Commercial Maneuvers						1.0		
				FL 64 – Commercial Maneuvers	1.5 (1.0)							
				FL 65 – Commercial Maneuvers	1.0 (1.0)							
				FL 66 – Complex Airplane or TAA	2.0 (1.0)			2.0 (1.0)	As Req.			
		1.0	As Req.	GL 45 – Stage V Exam								
		2.0	As Req.	GL 46 – Commercial Pilot End-of-Course Exam								
				FL 67 – Stage V Check (Complex Airplane or TAA)	1.0 (1.0)			1.0 (1.0)	As Req.			
22.0	As Req.	3.0	As Req.	Stage Totals	20.0 (14.0)			10.0 (7.0)	As Req.	9.0		

NOTE: 1. Ground lessons may include class discussion or online lessons.
2. The individual times shown on the Allocation Tables are for instructor/student guidance only; they are not mandatory for each ground lesson, flight lesson, or stage of training. At the completion of this course, the student must meet the minimum requirements of Part 141 for ground and flight training in order to graduate. Preflight and postflight briefings are as required.
3. In blocks where two times are shown, the first time is for students taking the Commercial Pilot–Airplane Single-Engine Land Practical Test at the end of Stage VI. If the student chooses to complete the second flight time listed (shown in parentheses) for Flight Stages V and VI, the student must also complete the multi-engine flight training time in Stage VII to meet the total time required for commercial pilot certification.
4. Check the applicable box in the Preface to use the Stage V TAA Option and conduct flight lessons 46, 47, 48, 49, 50, 66, and 67 in a TAA in lieu of a complex airplane.

Lesson Time Allocation

Ground Training					Flight Training							
					Dual					Solo		
Ground Lessons	Pilot Briefings	Stage/Final Exams	Exam Debriefings		Day Local	Day Cross-Country	Night	Complex	Instrument	Day Local	Day Cross-Country	Night
Flight Stage VI												
				FL 68 – Instrument/Commercial Review	2.0 (1.0)				As Req.			
				FL 69 – Instrument/Commercial Maneuvers/Procedures	2.0 (1.0)				As Req.			
				FL 70 – Commercial Maneuvers						2.0		
				FL 71 – Commercial Maneuvers						2.0		
				FL 72 – Commercial Maneuvers	2.0 (1.0)							
				FL 73 – Commercial Maneuvers						2.0		
				FL 74 – Commercial Maneuvers						2.0		
				FL 75 – Commercial Maneuvers						2.0		
				FL 76 – Commercial Maneuvers/Procedures	2.0 (1.0)				As Req.			
				FL 77 – Commercial Maneuvers/Procedures	2.0 (1.0)				As Req.			
				FL 78 – Complex Airplane or TAA Review	2.0 (1.0)			2.0 (1.0)				
				FL 79 – Solo Review						2.0		
				FL 80 – Solo Review						2.0		
				FL 81 – Solo Review						2.0		
				FL 82 – Complex Airplane or TAA Cross-Country		2.0 (1.0)		2.0 (1.0)	As Req.			
				FL 83 – Complex Airplane or TAA	1.0 (1.0)			1.0 (1.0)				
	As Req.			Briefing – Commercial Pilot Practical Test								
				FL 84 – Final Stage Review	2.0 (1.0)							
				FL 85 – Final Stage Review	2.0 (1.0)							
				FL 86 – Stage VI Check	1.5 (1.5)							
				FL 87 – End-of-Course Flight Check	1.5 (1.5)							
	As Req.			Stage Totals	20.0 (12.0)	2.0 (1.0)		5.0 (3.0)	As Req.	16.0		
31.0	As Req.	4.0	As Req.	Commercial Pilot Course Totals	40.0 (26.0)	10.0 (9.0)	5.0	15.0 (10.0)	As Req.	25.0	34.0	6.0

NOTE: 1. Stage VI does not contain ground lessons. The total ground training time listed is from Stages IV and V.
2. The individual times shown on the Allocation Tables are for instructor/student guidance only; they are not mandatory for each ground lesson, flight lesson, or stage of training. At the completion of this course, the student must meet the minimum requirements of Part 141 for ground and flight training in order to graduate. Preflight and postflight briefings are as required.
3. In blocks where two times are shown, the first time is for students taking the Commercial Pilot–Airplane Single-Engine Land Practical Test at the end of Stage VI. If the student chooses to complete the second flight time listed (shown in parentheses) for Flight Stages V and VI, the student must also complete the multi-engine flight training time in Stage VII to meet the total time required for commercial pilot certification.
4. Check the applicable box in the Preface to use the Stage VI TAA Option and conduct flight lessons 78, 82, and 83 in a TAA in lieu of a complex airplane.

Commercial Pilot Flight Training Stage V TAA Option

If you selected the technically advanced airplane (TAA) option by checking the appropriate box in the Preface, you may conduct the lessons shown in this section for the TAA transition in place of the same numbered flight lessons shown in Stage V of the Commercial Course for the complex airplane transition. By doing so in this stage and in Stage VI, the 10-hour TAA and total flight time requirements will be met. In addition, lessons in this stage that are not specifically identified as complex or TAA, such as dual and solo lessons focused on introducing and practicing commercial maneuvers, may be performed in a TAA or complex airplane.

TAA Transition	Complex Airplane Transition
Flight Lesson 46 **Dual — Local, TAA**	**Flight Lesson 46** **Dual — Local, Complex Airplane**
Flight Lessons 47 and 48 **Dual — Local, TAA**	**Flight Lessons 47 and 48** **Dual — Local, Complex Airplane**
Flight Lessons 49 and 50 **Dual — Local or Cross-Country, TAA**	**Flight Lessons 49 and 50** **Dual — Local, Complex Airplane**
Flight Lessons 51 – 65 *(TAA Optional)*	*Flight Lessons 51 – 65* *(Complex Airplane Optional)*
Flight Lessons 66 **Dual — Local or Cross-Country, TAA**	**Flight Lesson 66** **Dual — Local, Complex Airplane**
Flight Lesson 67 **Dual — Local, TAA** **Stage V Check**	**Flight Lesson 67** **Dual — Local, Complex Airplane** **Stage V Check**

STAGE OBJECTIVES

During this stage, the student gains proficiency in operating a technically advanced airplane (TAA). The student learns the procedures to operate the TAA's systems, manage information and automation, and handle equipment malfunctions and failures. In addition, the student gains skills to perform the flight maneuvers required for commercial pilot certification.

STAGE COMPLETION STANDARDS

This stage is complete when the student can demonstrate commercial pilot proficiency in the operation of the TAA and can correctly perform commercial maneuvers.

FLIGHT LESSON 46
DUAL — LOCAL, TAA

NOTE: A technically advanced airplane is defined as an airplane equipped with an electronically advanced avionics system. At a minimum, this system must include the following:

- *A primary flight display (PFD) with an airspeed indicator, turn coordinator, attitude indicator, heading indicator, altimeter, and vertical speed indicator;*
- *A multifunction display (MFD) with a moving map using GPS navigation to display the aircraft position;*
- *A two-axis autopilot integrated with the navigation and heading guidance system.*

OBJECTIVES

- Become familiar with operating technically advanced airplane (TAA) systems and equipment, including the avionics.
- Perform basic flight maneuvers and procedures in the TAA.
- Recognize and recover from power-off and power-on stalls and gain awareness of the airplane's spin characteristics.
- Become familiar with high altitude operations, including the use of supplemental oxygen and pressurization equipment as applicable to the airplane.

PREFLIGHT DISCUSSION

❏ Pilot's Operating Handbook
❏ Avionics Operating Guide/Manual
❏ Digital Flight Instrument Systems
❏ GPS Equipment Operation
❏ Information Management

INTRODUCE

PREFLIGHT PREPARATION

❏ Airworthiness Requirements
❏ Weather Information
❏ Performance and Limitations
❏ Operation of Systems
❏ Human Factors

PREFLIGHT PROCEDURES

❏ Self-Assessment
❏ Preflight Inspection
❏ Passenger Briefing
❏ Flight Deck Management
❏ Use of Checklists
❏ Engine Starting
❏ Taxiing
❏ Before Takeoff Check/Runup
  ◊ GPS Programming
  ◊ PFD Setup
  ◊ MFD Setup

AIRPORT OPERATIONS
- ❏ Radio Communications
- ❏ Runway Incursion Avoidance
- ❏ Traffic Patterns/Departure, Arrival, Entry, and Approach Procedures
- ❏ Land and Hold Short Operations (LAHSO)

TAKEOFFS, LANDINGS, AND GO-AROUNDS
- ❏ Takeoff Briefing
- ❏ Before Landing Briefing
- ❏ Normal and Crosswind Takeoffs and Landings

SLOW FLIGHT AND STALLS
- ❏ Maneuvering During Slow Flight
- ❏ Power-Off Stalls
- ❏ Power-On Stalls
- ❏ Accelerated Stalls
- ❏ Spin Awareness

AVIONICS SYSTEM OPERATION
- ❏ Checklists
- ❏ Engine Indication System
- ❏ Audio Panel
- ❏ Transponder
- ❏ Collision Avoidance—Traffic Information Operation and Interpretation
- ❏ Information Management

POSTFLIGHT PROCEDURES
- ❏ After Landing, Parking, and Securing

HIGH ALTITUDE OPERATIONS
- ❏ Supplemental Oxygen
- ❏ Pressurization

NOTE: If high altitude systems are not applicable to the airplane to be used for the practical test, the student must still demonstrate knowledge of high altitude operations sufficient to meet the requirements specified in the FAA Commercial Pilot Airman Certification Standards.

COMPLETION STANDARDS

- Demonstrate understanding of the TAA systems and equipment, including the avionics by using the proper procedures to perform flight operations.
- Perform the correct procedures to establish and recover from slow flight and stalls and perform normal and crosswind takeoffs and landings.
- Demonstrate understanding of the supplemental oxygen and pressurization systems applicable to the airplane.

POSTFLIGHT DEBRIEFING

- ❏ Critique maneuvers/procedures and SRM.
- ❏ Create a plan for skills that need improvement.
- ❏ Update the record folder and logbook.

STUDY ASSIGNMENT

Ground Lesson 37
Advanced Aerodynamics
Accelerated Stalls

FLIGHT LESSONS 47 AND 48

DUAL — LOCAL, TAA

NOTE: To practice navigation, this lesson may be conducted as a flight to a nearby airport or to a waypoint.

NOTE: A view-limiting device is required for the instrument maneuvers that apply to this lesson.

OBJECTIVES

- Become familiar with engaging the autopilot to perform basic maneuvers.
- Control the airplane attitude solely by instrument reference (IR).
- Become familiar with programming and operating the GPS, including using Direct-To navigation and accessing airport/waypoint information.
- Learn the procedures for performing short and soft-field takeoffs and landings in the TAA.
- Increase proficiency with operating TAA equipment, including the avionics system.
- Increase proficiency in performing basic flight maneuvers, slow flight, and stalls in the TAA.

PREFLIGHT DISCUSSION

❏ Direct-To Navigation
❏ Airport/Waypoint Information
❏ Autopilot Functions
❏ Automation Management

INTRODUCE

BASIC MANEUVERS (AUTOPILOT)

❏ Straight-and-Level Flight
❏ Climbs and Descents
❏ Turns to Headings
❏ Automation Management

BASIC INSTRUMENT MANEUVERS

Control and maneuvering solely by reference to instruments

❏ Straight-and-Level Flight (IR)
❏ Constant Airspeed Climbs (IR)
❏ Constant Airspeed Descents (IR)
❏ Turns to Headings (IR)
❏ Climbing and Descending Turns (IR)
❏ Recovery from Unusual Flight Attitudes (IR)

GPS NAVIGATION
- ❏ Direct-To Navigation
- ❏ Airport/Waypoint Information
- ❏ Auxiliary Functions/Setup

TAKEOFFS, LANDINGS, AND GO-AROUNDS
- ❏ Short-Field Takeoff and Maximum Performance Climb
- ❏ Short-Field Approach and Landing
- ❏ Soft-Field Takeoff and Climb
- ❏ Soft-Field Approach and Landing
- ❏ Rejected Takeoff
- ❏ Go-Around/Rejected Landing

NOTE: The instrument portion of this lesson should be accomplished on an "as required" basis depending on an assessment of the student's capabilities. Students enrolled in the Commercial Pilot Certification Course only must complete 10 hours of instrument training to meet the requirements of Part 141, Appendix D.

REVIEW

PREFLIGHT PREPARATION
- ❏ Airworthiness Requirements
- ❏ Weather Information
- ❏ Performance and Limitations
- ❏ Operation of Systems
- ❏ Human Factors

PREFLIGHT PROCEDURES
- ❏ Self-Assessment
- ❏ Preflight Inspection
- ❏ Passenger Briefing
- ❏ Flight Deck Management
- ❏ Use of Checklists
- ❏ Engine Starting
- ❏ Taxiing
- ❏ Before Takeoff Check/Runup
  - ◊ GPS Programming
  - ◊ PFD Setup
  - ◊ MFD Setup

AIRPORT OPERATIONS
- ❏ Radio Communications
- ❏ Runway Incursion Avoidance
- ❏ Traffic Patterns/Departure, Arrival, Entry, and Approach Procedures
- ❏ Land and Hold Short Operations (LAHSO)

TAKEOFFS, LANDINGS, AND GO-AROUNDS
- ❏ Takeoff Briefing
- ❏ Before Landing Briefing
- ❏ Normal and Crosswind Takeoffs and Landings

SLOW FLIGHT AND STALLS
- ❏ Maneuvering During Slow Flight
- ❏ Power-Off Stalls
- ❏ Power-On Stalls

❏ Accelerated Stalls
❏ Spin Awareness

AVIONICS SYSTEM OPERATION
❏ Checklists
❏ Engine Indication System
❏ Audio Panel
❏ Transponder
❏ Collision Avoidance—Traffic Information Operation and Interpretation
❏ Information Management

POSTFLIGHT PROCEDURES
❏ After Landing, Parking, and Securing

HIGH ALTITUDE OPERATIONS
❏ Supplemental Oxygen
❏ Pressurization

COMPLETION STANDARDS

- Demonstrate how to use Direct-To navigation and access airport/waypoint information using the GPS equipment.
- Demonstrate proficiency in short- and soft-field takeoff and landing configurations and procedures.
- Properly engage the autopilot to perform basic maneuvers.
- Maintain altitude ± 200 feet, headings ± 15°, and airspeed ± 15 knots during basic flight maneuvers (VR and IR).
- Demonstrate proficiency operating TAA equipment and performing basic flight maneuvers, steep turns, slow flight, and stalls.

POSTFLIGHT DEBRIEFING

❏ Critique maneuvers/procedures and SRM.
❏ Create a plan for skills that need improvement.
❏ Update the record folder and logbook.

STUDY ASSIGNMENT

Ground Lessons 38, 39, and 40
Predicting Performance
Controlling Weight and Balance
Maximum Performance Takeoffs and Landings

FLIGHT LESSONS 49 AND 50

DUAL — LOCAL OR CROSS-COUNTRY, TAA

NOTE: These lessons may be conducted as two separate flights to airports in the local area or the flight hours may be combined to accommodate a cross-country flight with at least one stop over 50 nautical miles from the original point of departure.

NOTE: A view-limiting device is required for the instrument maneuvers that apply to this lesson.

OBJECTIVE

- Become familiar with programming a GPS flight plan and VNAV descents.
- Use the autopilot to navigate on a course and reduce workload during abnormal and emergency situations.
- Become familiar with interpreting data link weather and TAWS/terrain proximity data.
- Become familiar with using the GPS to navigate during a diversion, including using the Nearest feature.
- Gain proficiency in programming Direct-To navigation and accessing airport/waypoint information.
- Gain proficiency in short and soft-field takeoffs and landings in the TAA.

PREFLIGHT DISCUSSION

❏ Cross-Country Flight Planning
❏ Data Link Weather
❏ TAWS/Terrain Proximity Data
❏ Risk Management (5Ps, PAVE)

INTRODUCE

PREFLIGHT PREPARATION

❏ Cross-Country Flight Planning
❏ Risk Management

PREFLIGHT PROCEDURES

❏ GPS Flight Plan Programming

AVIONICS SYSTEM OPERATION

❏ Data Link Weather
❏ CFIT Avoidance—TAWS/Terrain Proximity Data

GPS NAVIGATION

❏ Course Interception
❏ Determining Groundspeed and ETA
❏ Diversion
❏ Nearest Function
❏ VNAV Descent Planning
❏ Autopilot Use

BASIC INSTRUMENT MANEUVERS

Control and maneuvering solely by reference to instruments

❏ Using Radio Communications, Navigation Systems/Facilities, and ATC Services (IR)
❏ GPS Navigation (IR)

EMERGENCY OPERATIONS

❏ Loss of Primary Flight Instrument Indicators
❏ Systems and Equipment Malfunctions
❏ Emergency Descent
❏ Emergency Approach and Landing (Simulated)
❏ Emergency Equipment and Survival Gear
❏ Autopilot Use

REVIEW

GPS NAVIGATION
- ❑ Direct-To Navigation
- ❑ Airport/Waypoint Information
- ❑ Auxiliary Functions/Setup

BASIC MANEUVERS (AUTOPILOT)
- ❑ Straight-and-Level Flight
- ❑ Climbs and Descents
- ❑ Turns to Headings
- ❑ Automation Management

BASIC INSTRUMENT MANEUVERS
Control and maneuvering solely by reference to instruments
- ❑ Straight-and-Level Flight (IR)
- ❑ Constant Airspeed Climbs (IR)
- ❑ Constant Airspeed Descents (IR)
- ❑ Turns to Headings (IR)
- ❑ Climbing and Descending Turns (IR)
- ❑ Recovery from Unusual Flight Attitudes (IR)

AVIONICS SYSTEM OPERATION
- ❑ Collision Avoidance—Traffic Information Operation and Interpretation
- ❑ Information Management
- ❑ Automation Management

AIRPORT OPERATIONS
- ❑ Radio Communications
- ❑ Runway Incursion Avoidance
- ❑ Traffic Patterns/Departure, Arrival, Entry, and Approach Procedures
- ❑ Land and Hold Short Operations (LAHSO)

TAKEOFFS, LANDINGS, AND GO-AROUNDS
- ❑ Short-Field Takeoff and Maximum Performance Climb
- ❑ Short-Field Approach and Landing
- ❑ Soft-Field Takeoff and Climb
- ❑ Soft-Field Approach and Landing
- ❑ Rejected Takeoff
- ❑ Go-Around/Rejected Landing

NOTE: *The instrument portion of this lesson should be accomplished on an "as required" basis depending on an assessment of the student's capabilities. Students enrolled in the Commercial Pilot Certification Course only must complete 10 hours of instrument training to meet the requirements of Part 141, Appendix D.*

COMPLETION STANDARDS
- Demonstrate proficiency in displaying and interpreting data link weather and TAWS/terrain proximity data.
- Use the GPS to program a flight plan, perform a VNAV descent, and navigate during a diversion.
- Demonstrate proficiency in using the autopilot to navigate on a course and during abnormal and emergency situations.

- Demonstrate the ability to manage information and automation to make effective decisions as pilot in command of a TAA.

POSTFLIGHT DEBRIEFING

❏ Critique maneuvers/procedures and SRM.
❏ Create a plan for skills that need improvement.
❏ Update the record folder and logbook.

STUDY ASSIGNMENT

Ground Lessons 45 and 46

Stage V Exam
Commercial Pilot End-of-Course Exam

Note: Flight Lessons 51 through 65 may be conducted in a TAA.

FLIGHT LESSON 66

DUAL — LOCAL OR CROSS-COUNTRY, TAA

NOTE: A view-limiting device is required for the instrument maneuvers that apply to this lesson.

NOTE: This lesson may be conducted as a flight in the local area or as a cross-country flight with at least one stop over 50 nautical miles from the original point of departure.

OBJECTIVES

- Increase proficiency in operating the TAA by performing commercial maneuvers and a power-off 180° accuracy approach and landing.
- Perform the listed maneuvers and procedures to the level required by the Commercial Pilot Airman Certification Standards in preparation for the Stage V Check.

PREFLIGHT DISCUSSION

❏ TAA Equipment and Systems
❏ Single-Pilot Resource Management
❏ Commercial Pilot Airman Certification Standards

REVIEW

PREFLIGHT PREPARATION

❏ Weather Information
❏ Performance and Limitations
❏ Operation of Systems
❏ Human Factors
❏ Cross-Country Flight Planning
❏ Risk Management

PREFLIGHT PROCEDURES
- ❑ Flight Deck Management
- ❑ GPS Flight Plan Programming

SLOW FLIGHT AND STALLS
- ❑ Maneuvering During Slow Flight
- ❑ Power-Off Stalls
- ❑ Power-On Stalls
- ❑ Accelerated Stalls
- ❑ Spin Awareness

PERFORMANCE AND GROUND REFERENCE MANEUVERS
- ❑ Steep Turns
- ❑ Chandelles
- ❑ Lazy Eights
- ❑ Eights-On-Pylons
- ❑ Steep Spirals

AVIONICS SYSTEM OPERATION
- ❑ Collision Avoidance—Traffic Information Operation and Interpretation
- ❑ Data Link Weather
- ❑ CFIT Avoidance—TAWS/Terrain Proximity Data
- ❑ Information Management
- ❑ Automation Management

GPS NAVIGATION
- ❑ Direct-To Navigation
- ❑ Waypoint/Airport Information
- ❑ Auxiliary Functions/Setup
- ❑ Course Interception
- ❑ Determining Groundspeed and ETA
- ❑ Diversion
- ❑ Nearest Function
- ❑ VNAV Descent Planning
- ❑ Autopilot Use

EMERGENCY OPERATIONS
- ❑ Loss of Primary Flight Instrument Indicators
- ❑ Systems and Equipment Malfunctions
- ❑ Emergency Descent
- ❑ Emergency Approach and Landing (Simulated)
- ❑ Emergency Equipment and Survival Gear
- ❑ Autopilot Use

BASIC INSTRUMENT MANEUVERS

Control and maneuvering solely by reference to instruments
- ❑ Straight-and-Level Flight (IR)
- ❑ Constant Airspeed Climbs (IR)
- ❑ Constant Airspeed Descents (IR)
- ❑ Turns to Headings (IR)
- ❑ Climbing and Descending Turns (IR)
- ❑ Recovery from Unusual Attitudes (IR)
- ❑ Using Radio Communications, Navigation Systems/Facilities, and ATC Services (IR)
- ❑ GPS Navigation (IR)

AIRPORT OPERATIONS
- ❏ Radio Communications
- ❏ Runway Incursion Avoidance
- ❏ Traffic Patterns/Departure, Arrival, Entry, and Approach Procedures
- ❏ Land and Hold Short Operations (LAHSO)

TAKEOFFS, LANDINGS, AND GO-AROUNDS
- ❏ Power-Off 180° Accuracy Approach and Landing
- ❏ Normal and Crosswind Takeoffs and Landings
- ❏ Short- and Soft-Field Takeoffs and Landings
- ❏ Rejected Takeoff
- ❏ Go-Around/Rejected Landing

POSTFLIGHT PROCEDURES
- ❏ After Landing, Parking, and Securing

HIGH ALTITUDE OPERATIONS
- ❏ Supplemental Oxygen
- ❏ Pressurization

NOTE: *The instrument portion of this lesson should be accomplished on an "as required" basis depending on an assessment of the student's capabilities. Students enrolled in the Commercial Pilot Certification Course only must complete 10 hours of instrument training to meet the requirements of Part 141, Appendix D.*

COMPLETION STANDARDS

- In preparation for the Stage V Check, demonstrate commercial pilot proficiency as pilot in command of a TAA according to the criteria established by the Commercial Pilot Airman Certification Standards.
- Demonstrate the ability to use single-pilot resource management to make effective decisions, maintain situational awareness, prevent CFIT, and manage risk, tasks, and automation.
- Demonstrates the ability to safely act as pilot in command of a TAA.
- Perform the listed maneuvers and procedures to the level required by the Commercial Pilot Airman Certification Standards in preparation for the Stage V Check.

POSTFLIGHT DEBRIEFING

- ❏ Critique maneuvers/procedures and SRM.
- ❏ Create a plan for skills that need improvement.
- ❏ Update the record folder and logbook.

STUDY ASSIGNMENT

Ground Lessons 45 and 46

Stage V Exam
Commercial Pilot End-Of-Course Exam

FLIGHT LESSON 67

DUAL — TAA, STAGE V CHECK

NOTE: A view-limiting device is required for the instrument maneuvers that apply to this lesson.

OBJECTIVE

Demonstrate proficiency as pilot in command of a TAA to the chief instructor, assistant chief, or a designated check instructor during the Stage V Check.

PREFLIGHT DISCUSSION

Conduct of the Stage II Check, including:

- ❏ Maneuvers and Procedures
- ❏ Acceptable Performance Criteria
- ❏ Applicable Rules

REVIEW

PREFLIGHT PREPARATION

- ❏ Weather Information
- ❏ Performance and Limitations
- ❏ Operation of Systems
- ❏ Human Factors
- ❏ Cross-Country Flight Planning
- ❏ Risk Management

PREFLIGHT PROCEDURES

- ❏ Flight Deck Management
- ❏ GPS Flight Plan Programming

SLOW FLIGHT AND STALLS

- ❏ Maneuvering During Slow Flight
- ❏ Power-Off Stalls
- ❏ Power-On Stalls
- ❏ Accelerated Stalls
- ❏ Spin Awareness

PERFORMANCE AND GROUND REFERENCE MANEUVERS

- ❏ Steep Turns
- ❏ Chandelles
- ❏ Lazy Eights
- ❏ Eights-On-Pylons
- ❏ Steep Spirals

AVIONICS SYSTEM OPERATION

- ❏ Collision Avoidance—Traffic Information Operation and Interpretation
- ❏ Data Link Weather
- ❏ CFIT Avoidance—TAWS/Terrain Proximity Data
- ❏ Information Management
- ❏ Automation Management

GPS NAVIGATION
- ❏ Direct-To Navigation
- ❏ Waypoint/Airport Information
- ❏ Auxiliary Functions/Setup
- ❏ Course Interception
- ❏ Determining Groundspeed and ETA
- ❏ Diversion
- ❏ Nearest Function
- ❏ VNAV Descent Planning
- ❏ Autopilot Use

EMERGENCY OPERATIONS
- ❏ Loss of Primary Flight Instrument Indicators
- ❏ Systems and Equipment Malfunctions
- ❏ Emergency Descent
- ❏ Emergency Approach and Landing (Simulated)
- ❏ Emergency Equipment and Survival Gear
- ❏ Autopilot Use

BASIC INSTRUMENT MANEUVERS
Control and maneuvering solely by reference to instruments
- ❏ Straight-and-Level Flight (IR)
- ❏ Constant Airspeed Climbs (IR)
- ❏ Constant Airspeed Descents (IR)
- ❏ Turns to Headings (IR)
- ❏ Climbing and Descending Turns (IR)
- ❏ Recovery from Unusual Attitudes (IR)
- ❏ Using Radio Communications, Navigation Systems/Facilities, and ATC Services (IR)
- ❏ GPS Navigation (IR)

AIRPORT OPERATIONS
- ❏ Radio Communications
- ❏ Runway Incursion Avoidance
- ❏ Traffic Patterns/Departure, Arrival, Entry, and Approach Procedures
- ❏ Land and Hold Short Operations (LAHSO)

TAKEOFFS, LANDINGS, AND GO-AROUNDS
- ❏ Power-Off 180° Accuracy Approach and Landing
- ❏ Normal and Crosswind Takeoffs and Landings
- ❏ Short- and Soft-Field Takeoffs and Landings
- ❏ Rejected Takeoff
- ❏ Go-Around/Rejected Landing

POSTFLIGHT PROCEDURES
- ❏ After Landing, Parking, and Securing

HIGH ALTITUDE OPERATIONS
- ❏ Supplemental Oxygen
- ❏ Pressurization

COMPLETION STANDARDS

- Demonstrate commercial pilot proficiency as pilot in command of a TAA according to the criteria established by the Commercial Pilot Airman Certification Standards.
- Demonstrate the ability to use single-pilot resource management to make effective decisions, maintain situational awareness, prevent CFIT, and manage risk, tasks, and automation.

POSTFLIGHT DEBRIEFING

- ❑ Critique maneuvers/procedures and SRM.
- ❑ Create a plan for skills that need improvement.
- ❑ Update the record folder and logbook.

Commercial Pilot Flight Training Stage VI TAA Option

If you selected the technically advanced airplane (TAA) option by checking the appropriate box in the Preface, you may conduct the lessons shown in this section for the TAA transition in place of the same numbered flight lessons shown in Stage VI of the Commercial Course for the complex airplane transition. By doing so in this stage and in Stage VI, the 10-hour TAA and total flight time requirements will be met. In addition, lessons in this stage that are not specifically identified as complex or TAA, such as dual and solo lessons focused on introducing and practicing commercial maneuvers, may be performed in a TAA or complex airplane.

TAA Transition	Complex Airplane Transition
Flight Lessons 68 – 77 *(TAA Optional)*	*Flight Lessons 68 – 77* *(Complex Airplane Optional)*
Flight Lesson 78 **Dual — Local, TAA**	**Flight Lesson 78** **Dual — Local, Complex Airplane**
Flight Lessons 79 – 81 *(TAA Optional)*	*Flight Lessons 79 – 81* *(Complex Airplane Optional)*
Flight Lesson 82 **Dual — Cross-Country, TAA**	**Flight Lesson 82** **Dual — Cross-Country, Complex Airplane**
Flight Lesson 83 **Dual — Local, TAA**	**Flight Lesson 83** **Dual — Local, Complex Airplane**
Flight Lessons 84 – 87 *(TAA Optional)*	*Flight Lessons 84 – 87* *(Complex Airplane Optional)*

STAGE OBJECTIVES

During this stage, the student performs maneuvers and procedures to attain the proficiency level required of a commercial pilot with an instrument rating.

STAGE COMPLETION STANDARDS

This stage is complete when the student can demonstrate all flight maneuvers and procedures at the level required by the Commercial Pilot Airman Certification Standards for a commercial pilot with an instrument rating. The student also successfully completes the Stage VI and End-of-Course Flight Checks.

NOTE: Completion of the instrument navigation, holding, and approach tasks listed in specific lessons must be based on the available aircraft equipment. .

FLIGHT LESSON 78

DUAL — LOCAL, TAA

NOTE: A view-limiting device is required for the instrument maneuvers that apply to this lesson.

OBJECTIVES

- Become familiar with performing instrument approach and holding procedures in the TAA.
- Increase proficiency in all commercial maneuvers and procedures in the TAA.
- Increase proficiency in emergency operations in the TAA.

PREFLIGHT DISCUSSION

❏ Instrument Procedures in the TAA
❏ Single-Pilot Resource Management

REVIEW

PREFLIGHT PREPARATION

❏ Weather Information
❏ Performance and Limitations
❏ Operation of Systems
❏ Human Factors

PREFLIGHT PROCEDURES

❏ Flight Deck Management
❏ GPS Flight Plan Programming

AVIONICS SYSTEM OPERATION

❏ Collision Avoidance—Traffic Information Operation and Interpretation
❏ Data Link Weather
❏ CFIT Avoidance—TAWS/Terrain Proximity Data
❏ Information Management
❏ Automation Management

SLOW FLIGHT AND STALLS

❏ Maneuvering During Slow Flight
❏ Power-Off and Power-On Stalls
❏ Accelerated Stalls
❏ Spin Awareness

PERFORMANCE AND GROUND REFERENCE MANEUVERS

❏ Steep Turns
❏ Chandelles
❏ Lazy Eights
❏ Eights-On-Pylons
❏ Steep Spirals

EMERGENCY OPERATIONS

❏ Loss of Primary Flight Instrument Indicators
❏ Systems and Equipment Malfunctions
❏ Emergency Descent

❏ Emergency Approach and Landing (Simulated)
❏ Emergency Equipment and Survival Gear
❏ Autopilot Use

INSTRUMENT PROCEDURES
❏ ILS and RNAV (GPS) Approaches
❏ Missed Approach Procedures
❏ GPS Holding

TAKEOFFS, LANDINGS, AND GO-AROUNDS
❏ Power-Off 180° Accuracy Approach and Landing
❏ Normal and Crosswind Takeoffs and Landings
❏ Short- and Soft-Field Takeoffs and Landings

COMPLETION STANDARDS

- Demonstrate proficiency in instrument procedures according to the criteria established by Instrument Rating Airman Certification Standards.
- Demonstrate proficiency in performing commercial maneuvers, takeoffs and landings, and emergency procedures according to the criteria established by the Commercial Pilot Airman Certification Standards.
- Demonstrate satisfactory knowledge, risk management, and skills associated with all maneuvers and procedures required by the Commercial Pilot Airman Certification Standards.

POSTFLIGHT DEBRIEFING

❏ Critique maneuvers/procedures and SRM.
❏ Create a plan for skills that need improvement.
❏ Update the record folder and logbook.

Note: Flight Lessons 79 through 81 may be conducted in a TAA.

FLIGHT LESSON 82

DUAL — CROSS-COUNTRY, TAA

NOTE: A view-limiting device is required for the instrument maneuvers that apply to this lesson.

OBJECTIVES

- Increase proficiency in flight planning and cross-country operations in a TAA by performing a cross-country flight over 50 nautical miles from the original point of departure.
- Increase proficiency in using single-pilot resources management skills to make effective decisions during a cross-country flight in a TAA.
- Increase proficiency in performing instrument approach and holding procedures in the TAA.

PREFLIGHT DISCUSSION

❏ Instrument Procedures in the TAA
❏ Cross-Country Flight Planning
❏ Risk Management (5Ps, PAVE)

REVIEW

PREFLIGHT PREPARATION
- ❑ Weather Information
- ❑ Performance and Limitations
- ❑ Cross-Country Flight Planning
- ❑ Risk Management

PREFLIGHT PROCEDURES
- ❑ Flight Deck Management
- ❑ GPS Flight Plan Programming

AVIONICS SYSTEM OPERATION
- ❑ Collision Avoidance—Traffic Information Operation and Interpretation
- ❑ Data Link Weather
- ❑ CFIT Avoidance—TAWS/Terrain Proximity Data
- ❑ Information Management
- ❑ Automation Management

GPS NAVIGATION
- ❑ Direct-To Navigation
- ❑ Airport/Waypoint Information
- ❑ Auxiliary Functions/Setup
- ❑ Course Interception
- ❑ Determining Groundspeed and ETA
- ❑ Diversion
- ❑ Nearest Function
- ❑ VNAV Descent Planning

AUTOPILOT USE BASIC INSTRUMENT MANEUVERS
Control and maneuvering solely by reference to instruments
- ❑ Using Radio Communications, Navigation Systems/Facilities, and ATC Services (IR)
- ❑ GPS Navigation (IR)

EMERGENCY OPERATIONS
- ❑ Loss of Primary Flight Instrument Indicators
- ❑ Systems and Equipment Malfunctions
- ❑ Emergency Descent
- ❑ Emergency Approach and Landing (Simulated)
- ❑ Emergency Equipment and Survival Gear
- ❑ Autopilot Use

AIRPORT OPERATIONS
- ❑ Radio Communications
- ❑ Runway Incursion Avoidance
- ❑ Traffic Patterns/Departure, Arrival, Entry, and Approach Procedures
- ❑ Land and Hold Short Operations (LAHSO)

INSTRUMENT PROCEDURES
- ❑ ILS and RNAV (GPS) Approaches
- ❑ Missed Approach Procedures
- ❑ GPS Holding

TAKEOFFS, LANDINGS, AND GO-AROUNDS
❏ Power-Off 180° Accuracy Approach and Landing
❏ Normal and Crosswind Takeoffs and Landings
❏ Short- and Soft-Field Takeoffs and Landings

NOTE: *The instrument portion of this lesson should be accomplished on an "as required" basis depending on an assessment of the student's capabilities. Students enrolled in the Commercial Pilot Certification Course only must complete 10 hours of instrument training to meet the requirements of Part 141, Appendix D.*

COMPLETION STANDARDS
- Demonstrate proficiency in cross-country procedures in the TAA.
- Demonstrate proficiency in instrument procedures according to the criteria established by Instrument Rating Airman Certification Standards.
- Demonstrate proficiency in using single-pilot resources management skills to make effective decisions during a cross-country flight in a TAA.

POSTFLIGHT DEBRIEFING
❏ Critique maneuvers/procedures and SRM.
❏ Create a plan for skills that need improvement.
❏ Update the record folder and logbook.

STUDY ASSIGNMENT
Prepare for the Stage VI Check in Flight Lesson 86.

FLIGHT LESSON 83

DUAL — LOCAL, TAA

OBJECTIVE
Perform all maneuvers and procedures at the level required in the Commercial Pilot Airman Certification Standards in preparation for the Stage VI Flight Check and the FAA Commercial Pilot Practical Test.

PREFLIGHT DISCUSSION
❏ TAA Systems and Equipment
❏ Commercial Pilot Airman Certification Standards
❏ Single-Pilot Resource Management

REVIEW

PREFLIGHT PREPARATION
❏ Weather Information
❏ Performance and Limitations
❏ Operation of Systems
❏ Human Factors

PREFLIGHT PROCEDURES
❏ Flight Deck Management
❏ GPS Flight Plan Programming

AVIONICS SYSTEM OPERATION
- ❏ Traffic Information Operation and Interpretation
- ❏ Data Link Weather
- ❏ Collision Avoidance—Traffic Information Operation and Interpretation
- ❏ CFIT Avoidance—TAWS/Terrain Proximity Data
- ❏ Information Management
- ❏ Automation Management

SLOW FLIGHT AND STALLS
- ❏ Maneuvering During Slow Flight
- ❏ Power-Off and Power-On Stalls
- ❏ Accelerated Stalls
- ❏ Spin Awareness

MANEUVERS
- ❏ Steep Turns
- ❏ Chandelles
- ❏ Lazy Eights
- ❏ Eights-On-Pylons
- ❏ Steep Spirals

EMERGENCY OPERATIONS
- ❏ Loss of Primary Flight Instrument Indicators
- ❏ Systems and Equipment Malfunctions
- ❏ Emergency Descent
- ❏ Emergency Approach and Landing (Simulated)
- ❏ Emergency Equipment and Survival Gear
- ❏ Autopilot Use

TAKEOFFS, LANDINGS, AND GO-AROUNDS
- ❏ Power-Off 180° Accuracy Approach and Landing
- ❏ Normal and Crosswind Takeoffs and Landings
- ❏ Short- and Soft-Field Takeoffs and Landings
- ❏ Go-Around/Rejected Landing

COMPLETION STANDARDS

Demonstrate proficiency in performing each of the listed maneuvers and procedures to the level required by the Commercial Pilot Airman Certification Standards.

POSTFLIGHT DEBRIEFING

- ❏ Critique maneuvers/procedures and SRM.
- ❏ Create a plan for skills that need improvement.
- ❏ Update the record folder and logbook.

STUDY ASSIGNMENT

Commercial Pilot Practical Test Briefing

- ❏ Multi-Engine Performance and Limitations
- ❏ Review of V-Speeds

PREFLIGHT PROCEDURES
- ❏ Preflight Inspection
- ❏ Cockpit Management
- ❏ Engine Starting
- ❏ Normal and Crosswind Taxiing
- ❏ Before-Takeoff Check

SAFETY-RELATED OPERATIONS AND PROCEDURES
- ❏ Use of Checklists
- ❏ Positive Exchange of Flight Controls
- ❏ Wake Turbulence Avoidance
- ❏ Low-Level Wind Shear Avoidance
- ❏ Visual Scanning and Collision Avoidance
- ❏ Runway Incursion Avoidance
- ❏ Land and Hold Short Operations (LAHSO)
- ❏ Crew Resource Management
- ❏ Single-Pilot Resource Management

MANEUVERS (VR) (IR)
- ❏ Straight-and-Level Flight
- ❏ Constant Altitude Change of Airspeed
- ❏ Constant Airspeed Climbs and Descents
- ❏ Turns to Headings

TAKEOFFS AND LANDINGS
- ❏ Normal and Crosswind Takeoffs and Climbs
- ❏ Traffic Patterns
- ❏ Normal and Crosswind Approaches and Landings

POSTFLIGHT PROCEDURES
- ❏ After Landing
- ❏ Parking and Securing

COMPLETION STANDARDS

- Perform the listed ground operations with a minimum of instructor assistance.
- Demonstrate understanding of the attitudes and configurations necessary to perform the listed maneuvers and procedures by maintaining positive aircraft control with altitude ±200 feet, heading ±10°, and airspeed ±10 knots.

POSTFLIGHT DEBRIEFING

- ❏ Critique maneuvers/procedures and SRM.
- ❏ Create a plan for skills that need improvement.
- ❏ Update the record folder and logbook.

STUDY ASSIGNMENT

Ground Lesson 2

Aircraft Systems, Weight and Balance, and Performance

Multi-Engine Performance Considerations Briefing

Commercial Pilot Course Briefings

CROSS-COUNTRY PROCEDURES BRIEFING

These questions help review VFR cross-country flight planning and flight operations. The student should demonstrate understanding of these questions and any additional questions that develop during the briefing before performing VFR cross-country flight operations.

1. Explain what weather product you would use to obtain the most current weather condition at your destination.
2. What is the meaning of code "9900" found on a winds aloft forecast?

To answer questions 3 through 8, use the appropriate pilot's operating handbook.

3. Based on the following conditions, determine the distance required to take off and clear a 50-foot obstacle, assuming maximum takeoff weight and a 10-knot headwind.
   - Field elevation.....4,000 ft
   - Temperature.....24°C
   - Altimeter setting.....30.00
4. Determine the time, fuel, and distance needed to climb from a field elevation of 2,000 feet to a cruising altitude of 7,500 feet. Assume standard conditions and calm wind.
5. Based on a cruise altitude of 7,500 feet and standard conditions, determine the true airspeed and fuel flow at approximately 65% power. What is the airplane's maximum range with full fuel?
6. Based on the following conditions, determine the distance required to land over a 50-foot obstacle with a calm wind.
   - Field elevation.....3,000 ft
   - Temperature.....24°C
   - Altimeter Setting.....29.92
7. What are the standard service volumes of the three classes of VORs? What basic restriction affects VOR signal reception? How can you verify that a VOR is usable?
8. What are the different methods for conducting a VOR check?
9. Using a sectional chart, identify how each class of airspace is depicted. What are the basic VFR weather minimums and pilot and equipment requirements to operate in each class?
10. What is a special VFR clearance? Can you request it at night? What visibility and cloud clearances apply?
11. Name the various types of special use airspace and explain the restrictions they impose.
12. How can you tell when a part-time control tower is operating?

13. If your route takes you through Class C airspace and you have established two-way radio contact with the approach controller but have not received a clearance to enter Class C airspace yet, what should you do? What if the airspace is Class B?
14. What if ATC issues a clearance that would cause you to enter a cloud in Class C or Class B airspace. Should you comply with the clearance? Explain.
15. If ATIS indicates the ceiling is 800 feet overcast and the visibility is two miles, can you land under VFR at an airport with Class C airspace?
16. Assume the same weather as in the previous question and clear skies above the ceiling. Can you legally operate above the cloud ceiling in Class C airspace without obtaining a special VFR clearance?
17. What minimum weather conditions must exist for you to enter Class D, C or B airspace without requesting special VFR?

COMPLEX AIRPLANE/TAA TRANSITION BRIEFING

These questions help prepare the student for flying a complex airplane, a technically advanced airplane (TAA), or both. Because a wide variety of complex airplanes and TAAs exist, determine the questions appropriate to the specific training airplane. The student should demonstrate understanding of these questions and any additional questions that develop during the briefing before operating the complex airplane and/or TAA.

ELECTRICAL SYSTEM

1. What equipment provides the electrical power?
2. How are the electrical system components protected?
3. What is the voltage of the electrical system when the alternator is operating and when it is off?
4. What is the difference between an ammeter and a loadmeter? How is an alternator failure indicated on an ammeter or on a loadmeter? Which is installed in your airplane?
5. What should you expect if the alternator fails?
6. What is the correct procedure for resetting a popped circuit breaker?
7. What should you do in the case of an electrical fire?

FUEL SYSTEM

1. Is your airplane equipped with a carburetor or a fuel injection system?
2. How many fuel tanks does your airplane have? What is the total amount of usable fuel?
3. What is the minimum allowable grade of fuel that you can use with your airplane? What color is it?
4. Describe the recommended fuel management procedures in the POH.
5. When should you switch fuel tanks during a flight? What is the procedure for switching fuel tanks?
6. What is the purpose of the fuel pump, if appropriate, on your airplane? When should you use it?
7. Where are the fuel tank vents located and what is their purpose?

8. Where are the fuel drains located on your airplane? When should you use them?
9. Some fuel tanks have a tab located within them that is visible with the fuel cap removed. What is its purpose?

LANDING GEAR SYSTEM

1. Explain how the landing gear system operates.
2. At what point during the takeoff should you retract the landing gear?
3. When approaching to land, where do you normally extend the landing gear?
4. Explain the procedure for manually extending the landing gear if the primary power source fails.
5. After extending the landing gear manually as a training procedure, is it advisable or possible to retract it normally? Is it possible to retract the landing gear manually?
6. What airspeed limitations exist during landing gear extension and retraction? Is there an additional limitation when the gear is down and locked?
7. Explain the purpose of each annunciator light of the landing gear system.
8. What procedure should you follow if a gear-down annunciator light fails to illuminate?
9. Explain the operation of the landing gear warning system.

COWL FLAPS

1. What is the purpose of the cowl flaps and how are they controlled?
2. What gauge/instrument helps you determine how to position the cowl flaps?
3. Generally, how should you position the cowl flaps for takeoff, during climb, in cruise flight, during descent, approach, and after landing?

CONSTANT-SPEED PROPELLERS

1. Explain the advantages and disadvantages of constant-speed and fixed-pitch propellers.
2. Explain how a constant-speed propeller operates.
3. Explain how you should set the propeller control or takeoff, climb, cruise, and landing. What gauge/instrument do you use to set the propeller?
4. When you apply power by using the throttle, what gauge/instrument indicates the increase in power?
5. What does the manifold pressure gauge indicate when the airplane is sitting on the ramp after the engine is shut down? Why?
6. What gauge/instrument do you use to set the propeller?
7. As a general rule, when decreasing power, do you move the throttle or the propeller control first? Which do you move first to increase power?
8. If the oil pressure to the propeller governor is cut off, what pitch setting does the propeller go to in most single-engine airplanes?
9. Why do you check the oil pressure when cycling the propeller during engine runup?
10. What should you do if you are ready for takeoff before the oil temperature is in the normal operating range?

WEIGHT AND BALANCE

1. What is the basic empty weight for your airplane?
2. Compute the weight and balance of your airplane as you typically operate it during training with full fuel. What is the airplane's maximum payload? How must you distribute the weight to keep the airplane in balance?
3. Compute a weight and balance problem, assuming yourself and three 170-pound passengers, each with 20 pounds of baggage. How much fuel can the airplane carry? With that fuel load, how must you load the baggage to keep the airplane in balance?

GENERAL CONSIDERATIONS

1. List the following airspeeds for your airplane and, where applicable, the corresponding airspeed indicator color codes.
   - Stalling speed in the landing configuration
   - Stalling speed in a specified configuration
   - Best angle-of-climb speed
   - Best rate-of-climb speed
   - Normal approach speed
   - Approach speed with the flaps retracted
   - Short-field landing approach speed
   - Maximum flap extension speed(s)
   - Maximum landing gear extended speed
   - Maximum landing gear operating speed
   - Design maneuvering speed
   - Maximum structural cruising speed
   - Never-exceed speed
2. Where is the ELT located?
3. Explain the proper procedures for leaning the mixture for your airplane.
4. Where is the alternate static source and how do you use it?
5. Explain the procedures for dealing with an engine fire during flight.
6. What configuration and airspeed provides the greatest glide distance?

PRIMARY FLIGHT DISPLAY (PFD)

1. What is the function of the altitude and heading reference system (AHRS)?
2. What is a magnetometer?
3. Where is the slip/skid indicator on the PFD?
4. What does the trend vector indicate on the HSI? On the airspeed indicator? On the altimeter?
5. What is the function of the air data computer (ADC)?
6. How are instrument failures indicated on the PFD?
7. How does an integrated display system compensate for a PFD failure?
8. How do you manage a complete electrical failure?
9. Describe the backup instruments in your airplane.

AUTOPILOT

1. How do you program the autopilot to:
   - Hold your current heading and altitude?

- Climb or descend to a specific altitude?
- Navigate on a course?
- Perform an instrument approach?

2. How do you disengage the autopilot?
3. What is an automation surprise?

MFD/GPS FUNCTIONS

1. How do you set up the MFD map page?
2. How can you access information about an airport on the MFD?
3. How do you create a GPS flight plan?
4. What feature can you use to fly directly to a waypoint from your current position?
5. Explain how to use MFD functions in the event you need to divert.
6. How do you enter and activate an instrument departure, approach, or arrival procedure?
7. Describe features of your avionics system, including
   - Checklists
   - Engine Indication System
   - Audio Panel
   - Transponder
   - Traffic Information
   - Data Link Weather
   - TAWS/Terrain Proximity Data

COMMERCIAL FLIGHT MANEUVERS BRIEFING

These questions help prepare the student for flying commercial flight maneuvers and expand the student's understanding of the aerodynamics of these maneuvers. Consult the current FAA Commercial Pilot Airman Certification Standards for the required maneuvers.

SHORT-FIELD AND SOFT-FIELD TAKEOFFS AND LANDINGS

1. What flap setting should you use for a short-field takeoff? For a soft-field takeoff?
2. During a short-field approach and landing over a 50-foot obstacle, why is it necessary to establish a constant angle of descent over the obstacle?
3. Explain the effects of torque and P-factor on airplane control during short-field takeoffs.
4. What climb speed should you use during the initial portion of the short-field takeoff?
5. During a short-field approach and landing, how accurately must you land the airplane relative to a selected touchdown point?
6. How can you increase braking effectiveness during the landing roll after a short-field approach and landing?

7. At approximately what airspeed will the airplane become airborne during a soft-field takeoff?
8. At what point during the soft-field takeoff do you begin a climb? At what point during the soft-field takeoff do you retract the flaps?
9. Explain how you use power during the landing flare and touchdown during a soft-field landing.
10. Explain how to position the controls during crosswind takeoffs and landings.
11. What is the maximum demonstrated crosswind component for your airplane? Is this a limitation? Explain.
12. What effect does flap extension have on approach speed and descent angle?
13. If the airplane is low and slow on final approach, what corrective action should you take?
14. What is the significance of the key position during a landing?
15. Explain the procedures for performing a go-around.

STALL/SPIN AWARENESS

1. When practicing stall recognition and recovery, at what point should you initiate the recovery maneuver?
2. What is an accelerated stall? Explain how to perform and recover from an accelerated stall.
3. Are the manufacturer's spin recovery techniques included in the POH proven for the airplane and, if not, why not?
4. Describe the conditions required for a spin, the indications of an incipient spin and a full spin, and the spin recovery techniques for your airplane.

STEEP TURNS, CHANDELLES, AND STEEP SPIRALS

1. At what altitude and airspeed should you enter steep turns and chandelles?
2. How do you perform a steep turn? What bank angle should you use?
3. If an airplane weighs 2,500 pounds, how much weight must the wings support during a level turn with a 60° bank?
4. Explain the changes in elevator (or stabilator) pressure necessary to maintain level flight during the roll from a steep turn in one direction to a turn in the opposite direction.
5. What is the maximum recommended angle of bank for the chandelle?
6. Explain how you adjust the power during a chandelle.
7. What should your airspeed be at the completion of the chandelle?
8. Describe the differences in control pressures between the rollout from a chandelle to the right and one to the left. Where is the rudder pressure greatest?
9. Explain how you should recover from a chandelle. Why is altitude gain not the basis for judging the quality of a chandelle?
10. Describe the steps to perform a steep spiral.

LAZY EIGHTS AND EIGHTS-ON-PYLONS

1. What altitude and airspeed should you use to enter lazy eights?
2. What reference points do you use during lazy eights?
3. Where do the highest and lowest altitudes occur during lazy eights?

4. Do you use pitch or power to control the altitude and symmetry of the loops during lazy eights? Explain.
5. At what point during lazy eights do you use the greatest control pressures?
6. Compare and contrast turns around a point and eights-on-pylons.
7. How does wind direction affect the entry for eights-on-pylons?
8. At what altitude should you enter eights-on-pylons? How do you determine the pivotal altitude?
9. What is the maximum angle of bank that you should use during eights-on-pylons? Where does this bank angle occur?
10. Describe how you make changes in altitude during eights-on-pylons to hold the pylon position relative to the wing. Where do the highest and lowest altitudes occur?

POWER-OFF 180° ACCURACY APPROACHES AND LANDINGS

1. What is the objective of power-off accuracy landings?
2. What is the key position and why is it important?
3. What are some techniques to conserve or dissipate altitude?
4. Name the advantages and disadvantages of flaps and slips.
5. In which direction should you perform a slip when a crosswind exists?

COMMERCIAL PILOT PRACTICAL TEST BRIEFING

These questions help prepare the student for the FAA Commercial Pilot Practical Test. The student should demonstrate understanding of these questions and any additional questions that develop during the briefing before taking the End-of Course Flight Check and the FAA Commercial Pilot Practical Test.

These sample questions are examples of the types of questions that the examiner might ask during the oral and flight portions of the practical test. The examiner may ask questions at any time to determine if the student's knowledge of a subject area is adequate. Preparation for the practical test should include a review of FAR Parts 61, 91, and NTSB 830, with emphasis on the rules that apply to commercial pilots. Ensure the student knows what regulations apply to agricultural operations (Part 137), external load operations (Part 133), and air transportation of hazardous materials (HMR 175). In addition, thoroughly discuss each FAA question incorrectly answered on the knowledge test because the examiner might emphasize these areas.

AIRPLANE REQUIREMENTS

1. What certificates and documents must you have on board the airplane?
2. Locate the following inspections, as appropriate, in the airframe and engine logbooks: annual, 100-hour, pitot-static, altimeter, and transponder.
3. What equipment, in addition to that required for flight during the day, must you have for night operations?
4. When is an electric landing light required?

5. Must all airplanes be equipped with an ELT? If your airplane requires an ELT to be installed, when may you fly without one?

PILOT REQUIREMENTS

1. What recency of experience requirements must you meet to act as a pilot in command of an aircraft carrying passengers during the day? At night?
2. Can the holder of a commercial pilot certificate rent an airplane (with a recent 100-hour inspection) from a fixed-base operator and use it to carry passengers for hire?
3. What minimum class of medical certificate must you hold when exercising commercial privileges? How long is the appropriate medical certificate valid for operations that require a commercial pilot certificate?
4. Define the term "commercial operator."

THE FLIGHT ENVIRONMENT

1. What is the significance of 14,500 feet MSL in relation to Class E airspace?
2. What are the prerequisites for flight within Class A airspace?
3. Explain the vertical limit for Class D airspace.
4. Explain the pilot and equipment requirements within Class B and C airspace.
5. What is the maximum authorized airspeed below 10,000 feet MSL within a Class D airspace area below the floor of associated Class B airspace?
6. What are the minimum visibility and cloud clearance requirements for VFR flight in both controlled and uncontrolled airspace?
7. Explain when you may operate within the following areas: prohibited, restricted, warning, alert, and MOA.
8. Under what conditions must you file a VFR flight plan?
9. What are the pilot and passenger oxygen requirements?
10. Explain the meaning of ATC light gun signals to aircraft on the ground and in flight.

AVIATION PHYSIOLOGY

1. Explain the four types of hypoxia.
2. Discuss the similarities and differences between the conditions of hypoxia and hyperventilation. What are the symptoms and effects for each condition, and what corrective actions should you take in each case?
3. If a passenger exhibits symptoms that could be attributed to more than one condition, what should you do?
4. What are the rules concerning alcohol use and the operation of an airplane?
5. Name several common medications that you should not take before or during a flight.
6. What is spatial disorientation, when is it most likely to occur, and what corrective action should you take if you become spatially disoriented?
7. What are the effects of fatigue on a pilot?
8. What are the effects of nitrogen on a SCUBA diver, and what precautions need to be observed prior to flight?

AIRPLANE EQUIPMENT AND SYSTEMS

To answer the following questions, refer to the pilot's operating handbook for the airplane used for the practical test.

1. What is your airplane's total fuel capacity? Total usable fuel quantity?
2. What is the fuel grade and corresponding color of the fuel used in your airplane? If the recommended fuel grade is not available, what grade(s) of fuel can you use?
3. Explain fuel management for your airplane.
4. Where is the battery located in your airplane and what is its voltage?
5. Explain the information displayed by your airplane's ammeter or load meter.
6. What are the procedures for dealing with an electrical fire in flight?
7. What are the maximum and minimum allowable flap settings for takeoff?
8. Explain the cold and hot starting procedures for your airplane.
9. Explain the manual landing gear extension procedures for your airplane.
10. List the best rate-of-climb (V_Y) and best angle of climb (V_X) speeds for your airplane when loaded to its maximum allowable weight at sea level.
11. What is your airplane's stalling speed at maximum weight in level flight? In a 45° bank?
12. List the following speeds for your airplane: V_{FE}, V_{LO}, and V_{LE}.
13. What is the maximum demonstrated crosswind component for your airplane? Is this an airplane limitation?
14. What is the minimum required ground roll for takeoff at maximum takeoff weight if the field elevation is 5,000 feet and the temperature is 26°C?
15. Assuming the same conditions given in the previous question, what is your rate of climb with gear and flaps retracted at the best rate-of-climb airspeed?
16. What does the term "service ceiling" mean?
17. What are the service and absolute ceilings for your airplane?
18. Assume you are flying at a pressure altitude of 4,000 feet under ISA+10°C conditions. What are the predicted true airspeed and fuel flow values for 65% power?
19. What are the maximum allowable baggage compartment weights?
20. If you do not know an adult passenger's weight, what should you use for weight and balance computations? When should you not use standard weights?
21. Calculate the weight and balance for your airplane as it will be loaded for the practical flight test and assume the examiner weighs 180 pounds.
22. Explain how a constant-speed propeller operates on a multi-engine airplane.
23. What is the maximum continuous operating power setting for your airplane? Why is it important to comply with these limitations?
24. Explain the procedures to apply and reduce power.
25. Explain the propeller synchronizing system.