



Principles Helicopter Flight Syllabus

A Flight & Ground Training Course for Private Pilot Helicopter Certification

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A Flight & Ground Training Course for Private Pilot Helicopter Certification



Aviation Supplies & Academics, Inc. Newcastle, Washington

Principles of Helicopter Flight Syllabus

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About this Syllabus

Course Objective:

The objective of this syllabus is for the student to gain the necessary aeronautical skill, knowledge and experience to meet the requirements of a Private Pilot certificate with a Rotorcraft Category rating and a Helicopter class rating.

Prerequisites:

The student must be able to read, speak and understand the English language, meet the physical standards for a third class medical certificate, and possess a valid student pilot certificate. Student must be 16 years old to solo, and 17 years old to gain certification.

Experience Requirements for a Private Pilot Certificate Include:

35 hours of flight time (40 hours for Part 61 programs)35 hours of ground training (no minimum time is specified for Part 61 programs)

Private Pilot Certification Course:

The Private License is made up of 2 requirements: Aeronautical Skill and Aeronautical Knowledge. This syllabus is written to satisfy 14 CFR Part 141 requirements. With the addition of 5 hours of flight, this syllabus will be equally effective for 14 CFR Part 61 programs. The syllabus is in four stages, containing modules. Each stage must be completed in _____ days, not to exceed 90 days. Each module contains both a flight and ground lesson. This presents an integrated flight training process and will promote easier learning and a more efficient flight training program. Ideally, the ground lesson will be completed prior to the flight. Each flight lesson must include a pre- and post-flight briefing.

Testing Procedures:

Each module contains a reading assignment associated with the ground training program. The review questions following each chapter will test the student's understanding of the material covered throughout the ground lesson, and must be answered prior to moving on to the next module. A stage exam is included with each stage, testing the student on both the ground and flight training material covered throughout the stage. This exam must be passed with a minimum score of 80%, and reconciled to 100%, in order to proceed to the next stage.

It is essential that the objective of each module be accomplished before moving on to the next module.

Minimum Requirements:

The time necessary for the syllabus to qualify for 141 operations includes meeting 35 hours of both ground and flight instruction (40 hours flight training for Part 61 programs). This is a minimum time—the national average for completion of the Private certificate is 73 flight hours. Many factors play into the finishing flight time: frequency of flying, cooperative weather, airplane and instructor scheduling, and lapses in the flight training process. It is recommended the student fly at least twice a week. This type of schedule produces the most efficient training, and cuts down on review time. If there is a lapse in between flights, it may be necessary to review maneuvers: In this case review flights should be scheduled to make sure flight skills are mastered before moving on. (This will allow the student to continue following the syllabus, which is necessary for a 141 program.) The student should feel comfortable performing each task in all previous modules before progressing to the next stage. If the

student exceeds more than _____ hours of the minimum 141 recommended time allotted per module, the chief flight instructor must be informed.

Instruction in a pilot ground trainer that meets the requirements of Part 141.41(a) may be credited for a maximum of 20% of the total flight training hour requirements. Instruction in a pilot ground trainer that meets the requirements for Part 141.41(b) may be credited for a maximum of 15% of the total flight training hour requirements. When a ground training device is used, the ideal sequence is to learn in the ground training device and practice in the helicopter.

Required Materials for the Private Pilot Rotorcraft Course:

- *Principles of Helicopter Flight* (#ASA –PHF-2)
- Rotorcraft Flying Handbook (#FAA-H-8083-21)
- Pilot's Handbook of Aeronautical Knowledge (#FAA-H-8083-25)
- FAR/AIM (#ASA-FR-AM-BK, updated annually)
- Private Pilot Rotorcraft Practical Test Standards (#FAA-S-8081-15A)

Recommended Materials for the Private Pilot Rotorcraft Course:

- ASA *Private Pilot Test Prep* (#ASA-TP-P, updated annually)
- ASA Helicopter Fundamentals DVD (ASA-VTP-H)
- ASA logbook (student's choice)
- ASA flight computer (E6B or CX-2 Pathfinder)
- ASA plotter (student's choice)
- ASA flight logs for cross-country flights (#ASA-FP-2)
- ASA Private Pilot Oral Exam Guide (#ASA-OEG-P)
- ASA Helicopter Oral Exam Guide (#ASA-OEG-H)
- Sectional for local area
- · Airport/Facility Directory for local area

The syllabus uses *Principles of Helicopter Flight* for the ground training program. The review following each chapter should be finished with the assigned reading. Certain ground lessons are supplemented with reading assignments from *Pilot's Handbook of Aeronautical Knowledge*. The *Rotorcraft Flying Handbook* is recommended to enhance the program. Each book contains an index that will help pinpoint the material for the subject you are working on. ASA's *Private Pilot Test Prep* is also recommended to enhance the program. Use of the Test Prep will ensure that the student is completely prepared for the FAA Knowledge Exam upon completion of the course. Instructors using this syllabus must ensure current Practical Test Standards are upheld and that *Airplane Flying Handbook* (FAA-H-8083-3) procedures are maintained at all times.

If you have any questions on how to best use this syllabus, please call ASA directly at 1-800-ASA-2-FLY. We will be happy to provide suggestions on how to tailor this syllabus to specifically meet your training needs.

Note to Instructors:

Answers to the Stage Exams are available to instructors by calling 1-800-ASA-2-FLY, or fax your request on letterhead to 1-425-235-0128.

Photocopy this page, fill out coupon and mail or fax to ASA.

You may also register online at www.asa2fly.com.

Name of Chief Flight Instructor, or person responsible for maintaining Part 1 Name of Flight School Address	()	()
Name of Flight School Address	()	()
Address	()	()
City State Zip	Phone	Fax
Which textbooks and materials do you use for your Part 141 program? Do you also operate a Part 61 program? Yes I No I		
f yes, which textbooks and materials do you use for your Part 61 program?		
Does this book satisfy your aviation needs? Yes 🗆 No 🗅 f no, please explain:		
General comments or suggestions:		
		10/

Private Pilot Minimum Course Hours For Part 141, Appendix B Compliance

These course hours are for student/instructor guidance only. They are a suggested time schedule which will ensure minimum flight and ground training compliance with 14 CFR Part 141. Note: Ground instruction should include classroom discussion, and pre- and post-flight briefings.

Page		Dual Flight	Solo Flight	Dual Cross- Country	Solo Cross- Country	Dual Night	Ground Instruction
01	Stage 1		1				
03	Module 1	1.0					1.5
04	Module 2	1.0					1.0
05	Module 3	1.0					1.5
06	Module 4	1.0					1.5
07	Module 5	1.0					1.5
08	Module 6	1.0					1.5
09	Module 7	1.0					1.5
10	Module 8	1.0					1.5
11	Module 9	1.0					1.5
12	Module 10	1.0					1.0
13	Module 11	1.0					1.5
14	Module 12	1.0					1.5
15	Module 13	0.5	0.5				0.5
16	Module 14/ Stage Check	1.0					1.0
19	Stage 2						
20	Module 1		1.0				
21	Module 2	0.5					1.0
22	Module 3		1.0				
23	Module 4	1.0					2.0
24	Module 5		1.0				
25	Module 6	1.0					1.0
26	Module 7		1.0				
27	Module 8/ Stage Check	1.0					1.0
28	Stage 3						
29	Module 1	1.0				1.0	1.5
30	Module 2	1.5		1.5			2.0
31	Module 3	1.0					2.0
32	Module 4	1.5		1.5		1.5	1.0
34	Module 5		1.5		1.5		
35	Module 6		2.0		2.0		0.5
36	Module 7/ Stage Check	1.0					1.0
37	Stage 4						
38	Module 1	1.0				1.0	1.0
39	Module 2	1.0					0.5
40	Module 3	1.0					1.0
41	Module 4/ Stage Check	1.0					
	TOTALS	23 + 4 Stage Checks	8.0	3.0	3.5	3.5	35

Helicopter Enrollment Certificate

 ${f U}$ his is to certify that

Student Name

is enrolled in the Federal Aviation Administration approved **Private Pilot Helicopter Certification Course**, conducted by

School and Certificate Number

Chief Instructor

Date of Enrollment

Helicopter Graduation Certificate

 ${f U}$ his is to certify that

Pilot Name and Number

has satisfactorily completed each required stage of the approved course of training including the tests for those stages, and has received _____ hours of cross-country training.

____ has graduated from the

Federal Aviation Administration approved **Private Pilot Helicopter Certification Course** conducted by

School and Certificate Number

Chief Instructor

Date of Graduation

SFAR 73 – Instruction in Robinson Helicopters

SFAR 73 requires that specific training requirements be met for pilots of R22 and R44 helicopters.

- 1. Awareness training must be given by an endorsed instructor prior to manipulating the controls. The instruction must consist of:
 - Energy management
 - Mast bumping
 - Low rotor RPM (blade stall)
 - Low G hazards
 - Rotor RPM decay
- 2. Pilots with less than 200 hours (50 in the R22 or R44) must meet certain requirements before acting as Pilot in Command. See SFAR 73 and the endorsement provided on page 17. (Endorsement valid for 12 months.)

Training must include:

- 10 dual in same model Robinson
- Enhanced training in autorotation procedures
- Engine rotor RPM control without the use of the governor
- Low rotor RPM recognition and recovery
- Effects of low G maneuvers and proper recovery procedures
- 3. Specific requirements must be met within 90 days prior to solo flight (for non helicopter rated pilots). See SFAR 73 and the pre-solo endorsement for Robinson pilots on page 17.

Training must include:

- 20 hours dual in same model Robinson
- · Enhanced training in autorotation procedures
- Engine rotor RPM control without the use of the governor
- Low rotor RPM recognition and recovery
- Effects of low G maneuvers and proper recovery procedures

Instructor's note: Use the following endorsement when signing off students for awareness training:

I certify that	(First name, MI, Last name) has received the Awareness Training
required by SFAR 73 2(a)(3) in a	(model of Robinson)

[date] J. Jones 654321 CFI [expiration date]

Stage 1 Introduction to Helicopter Flying

Objective

The objective of Stage 1 is for the student to become proficient in, and have an understanding of the following:



Ground Training

- Course objective
- · School requirements, procedures and regulations
- Grading criteria
- Forces acting on a helicopter
- Stability and control
- Training helicopter (airframe, engine, systems, flight instruments)
- Basic flight maneuvers
- Flight information
- Basic weather theory
- Emergency and hazardous conditions
- Flight physiology
- Regulations



Flight Training

- Flight training process
- Training helicopter
- Preflight
- "Special Emphasis Areas" (per PTS)
- Taxiing
- Four basics of flight (straight and level, turns, climbs, descents)
- Hovering
- Autorotations
- Use of sectional
- Airspace
- Collision avoidance
- Emergencies
- Steep Turns

Completion Standards

Stage 1 is complete when the student is ready and endorsed for solo flight. Student shall score at least 80% on the Stage 1 Exam, and all deficient areas shall be reconciled to 100%. Student shall have third-class medical and student pilot certificate upon completion of this stage.

Minimum 141 Requirements: Dual

1.0 hour flight
 1.5 hours ground instruction

Ground Training

Objective:

For the student to be introduced to the Private Pilot Certification program, and learn the flight school requirements, procedures, regulations, and grading criteria. Student shall also become familiar with the atmosphere and the forces acting on a helicopter.

Content:

- _____ Review of course and objectives
- _____ School requirements, procedures, regulations
- ____ Grading criteria, expectations of student
- ____ Review objective of Stage 1
- ____ Atmosphere

Atmos	pheric	pressure
-------	--------	----------

- _____ Air temperature
- ____ Combined effects
- Moisture content
- _____ Standard atmosphere
- Pressure altitude
- _____ Density altitude
- The forces acting on a helicopter

____ Lift

		Definitions
		Lift formula
		Dynamic energy
		Center of pressure
		Aerodynamic center
Drag		
_ 0		Drag formula
		Parasite drag
		Profile drag
		Form drag
		Skin friction
		Induced drag/methods to reduce
		Tip vortices
		Total drag curve
Lift/Drag	ratio	
_ 0		Best L/D ratio
		Factors influencing L/D ratio

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

Principles of Helicopter Flight, 2nd Edition, Chapters 2-5

Flight Training

Objective:

For the student to be introduced to and become familiar with preflight inspections, checklist operations, starting and taxi procedures and the function and use of the helicopter controls.

Content:

- Preflight inspection and aircraft documents (certificates and documents, aircraft logbooks, helicopter servicing, aircraft manual)
 Introduction to PTS and special emphasis areas
- _____ SFAR 73 training if applicable (see page 17)
- Positive exchange of flight controls
- _____ Familiarization with helicopter
- _____ Starting the engine and rotor engagement
- ____ Checklists/system checks
- ____ Normal takeoff
- ____ Hovering
- ____ Hover taxi
- _____ Normal departure and climb
- ____ Effects of controls
- _____ Attitude and power changes—power, attitude and speed change
- ____ Normal approach to landing
- Postflight procedures

Completion Standards:

This module is complete when the student can conduct the preflight with minimum assistance, properly use all checklists, start the helicopter, and operate the controls.

Recommended Reading:

FAA-8083-21, Chapters 4-6

Stage 1 / Module 1

Date of Completion:

Signature:

Minimum 141 Requirements: Dual

1.0 hour flight1.0 hour ground instruction

Ground Training

Objective:

To introduce the student to the aerodynamic principles of climbing, descending and turning a helicopter. Students will also get a review of basic physics in the reading.

Content:

Controls and their effects	
Hover	
In and out of ground effect	
Factors in ground effect	
Over-controlling	
Forward flight	
Basic aspects of horizontal flight	
Changing disc attitude	
Dissymmetry of lift	
Elimination of dissymmetry of lift	
Flapback	
Designs that reduce flapping amplitude	
Reverse flow	
Translational lift	
Transverse flow effect	
Climbing	
Horsepower-available curve	
Rate of climb	
Angle of climb	
Effect of wind	
Descending	
Angle of descent	
Effect of wind	

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

Principles of Helicopter Flight, 2nd Edition, Chapters 1, 10, 11, 12, and 14

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Flight Training

Objective:

To gain experience with hovering and improve basic operation of the controls. The student will also be introduced to collision avoidance procedure and be made aware of mast bumping conditions.

Content:

- ____ Preflight
- ____ Personal checklist—"IM SAFE"
- _____ Surface markings
- ____ Mast bumping
- ____ Takeoff and landing
- ____ Hovering
- ____ Hover Taxi
- _____ Shallow and medium banked turns
- ____ Scanning procedures
- _____ Normal approach and landing
- _____ Postflight procedures

Completion Standards:

This module is complete when the student has basic control of the aircraft in a hover and can maintain altitude within 300 feet, airspeed within 20 knots and heading within 20 degrees while performing the maneuvers of this module.

Recommended Reading:

FAA-H-8083-21, Chapter 9 (1-11)

Stage 1 / Module 2	
Date of Completion:	
Signature:	
Time Flown:	

Minimum 141 Requirements: Dual

1.0 hour flight1.5 hours ground instruction

Ground Training

Objective:

For the student to gain an understanding of how helicopter systems function.

Content:

- ____ Engines
- Fuel systems
- ____ Electrical systems
- _____ Hydraulics
- ____ Environmental systems
- _____ Anti-icing systems
- ____ Transmission
- ____ Main rotor gear box
- ____ Freewheeling unit
- ____ Drive shafts
- _____ Tail rotor gear box
- ____ Rotor brake
- ____ Clutch
- ____ Chip detectors
- _____ Swashplate Rotor blades
- Trim controls
- Tail rotors
- Vibrations
- Control functions
- Engine cooling
- ____ Englice cooming
- ____ Dual tachometer instruments
- _____ Rotor stabilizing design systems

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

FAA-H-8083-21, Chapter 5 *Principles of Helicopter Flight*, 2nd Edition, Chapter 20

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Flight Training

Objective:

For the student to become familiar with the local area and to practice the four basics of flight: straight and level, climbs, turns, and descents.

Content:

- ____ Use of sectional
- ____ Preflight
- ____ Land and hold short operations
- ____ Normal takeoff and departure
- ____ Hover taxi
- ____ Hovering
- Four basics of flight: Level flight, climbing, descending and turning
- _____ Sideways and backward flight
- ____ Transitions—leaving the hover to achieve forward flight and returning to the hover from forward flight
- Normal approach and landing
- Traffic patterns
- Postflight procedures

Completion Standards:

This module is complete when the student can maintain flight within 250 feet altitude, 20 degrees heading and 20 knots airspeed while performing the maneuvers listed in the content of this module. Also the student must be proficient in postflight operations and be oriented to the practice area and airport.

Recommended Reading:

FAA-H- 8083-21, Chapter 9 (12-20)

Stage 1 / Module 3

Date of Completion: _

Signature:_

Minimum 141 Requirements: Dual

1.0 hour flight, 1.5 hours ground instruction

Ground Training

Objective:

For the student to gain an understanding of the aerodynamic forces that affect helicopter flight, particularly with respect to the tail rotor.

Content: .

Aerodynamic forces
Rotational forces
Blade angle and angle of attack
Induced flow
Airflow caused by velocity
Total rotor thrust
Rotor drag
Inflow angle
Forces opposing weight
Rotor thrust
Rotor blade airfoils
Drag
Stress
Effect of local air velocity on blade design
Blade tip speeds
Blade design
Rotor drag
Disc loading
Changes in gross weight
Changes in altitude
Changes in configuration
Ground effect
Translational lift
The Anti-Torque rotor
Anti-torque functions
Effect of the wind
Translating tendency
Tail rotor flapping
Tail rotor designs
Methods of anti-torque control
Tail rotor failure

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

Principles of Helicopter Flight, 2nd Edition, Chapters 6, 7, 8, and 9



Flight Training

Objective:

For the student to gain proficiency in handling crosswind conditions and practice forward and rearward hovering as well as hovering turns.

Content:

- Obtaining weather
- Preflight
- Radio communication
- Runway incursions
- Servicing the helicopter
- Ground safety
- _____ Normal and crosswind takeoffs and landings
- Vertical takeoff and landings
 - Hovering
 - ____ Steep turns—30 degrees
- Transitions from the hover to hover at low altitude
- Traffic patterns
- ____ Normal approach and landing
- Postflight procedures

Completion Standards:

This module is complete when the student can maintain flight within 300 feet altitude, 20 degrees heading, 20 knots airspeed while performing the maneuvers listed in the content of this module. The student must also be familiar with orientation using the sectional.

Recommended Reading:

AIM, Chapter 4—Section 2

Stage 1 / Module 4	
Date of Completion:	
Signature:	
ſime Flown:	

Minimum 141 Requirements: Dual

1.0 hour flight,1.5 hours ground instruction

Ground Training

Objective:

For the student to increase his/her knowledge of the basic flight maneuvers and learn about the flight instruments.

Content:

Maneuver	s and turning
	Rate of turn
	Radius of turn
	Rate and radius interaction
	The steep turn
	Effect of altitude on rate and radius of turn
	Effect of gross weight on rate and radius of
	Effect of wind on rate and radius of turn
	Effect of wind on Indicated airspeed and Translational lift
	Effect of slingloads
	Effect of slipping and skidding
	Pull out from a descent
Flight Inst	truments
	Pitot static instruments
	Altimeter
	VSI
	ASI
Gyro instr	uments
	Turn indicators
	Inclinometer
	Attitude indicator
	Heading indicator
Compass	

Completion Standards:

This lesson is complete when the student has successfully completed the assigned reading.

Assignment:

Principles of Helicopter Flight, 2nd Edition, Chapters 15 and 16

Flight Training

Objective:

To practice and gain proficiency with hovering maneuvers and ground reference maneuvers. Student will also be introduced to mast bumping and vortex ring state conditions.

Content:

- ____ Obtaining weather
- Preflight Normal takeoff and departure
- Stationary hover
- _____ Square pattern in hover
- Vertical takeoff and landings
- Crosswind takeoff and climb
- Crosswind approach
- Traffic patterns
- Vortex ring state
- Postflight procedures

Completion Standards:

The student should be able to establish a hover and maintain a hovering altitude within 50 feet, keep lateral and forward movement within 50 feet and headings within 20 degrees.

Stage 1 / Module 5

Date of Completion: _

Signature:

Minimum 141 Requirements: Dual

- 1.0 hour flight,
- 1.5 hours ground instruction

Ground Training

Objective:

For the student to gain an understanding of the factors affecting helicopter performance. The student will also learn the effects of weight and balance and learn how to perform weight and balance computations.

Content:

Helicopter performance
Performance factors
Altitude
Pressure altitude
Density altitude
Moisture content of air
Aircraft gross weight
External stores
The wind
Power check
Performance graphs
Hover ceiling graph
Takeoff distance over 50-foot obstacle
Max gross weight for hovering
Climb performance
Range
Endurance
Weight and balance
Definitions
Weight
Balance
Center of gravity limits
Calculating center of gravity position
Effect of external loads

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

Principles of Helicopter Flight, 2nd Edition, Chapters 25 and 26

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Flight Training

Objective:

To introduce the student to low rotor rpm operations. The student will practice go-arounds as well as basic maneuvers.

Content:

- ____ Obtaining weather
- ____ Preflight
- ____ Discussion of cockpit management and ATC light signals
- _____ Vertical takeoff and landings
- _____ Crosswind takeoff to a hover
- _____ Normal and crosswind approach to a hover
- _____ Hovering/ground reference maneuvers
- _____ Recognition and recovery from low rotor rpm
 - ____ During cruise
 - ____ On takeoff
 - ____ At a hover
 - _ Normal approach and landing
- ____ Go-around
- ____ Traffic pattern operations
- ____ Postflight procedures

Completion Standards:

This module is complete when the student can maintain traffic pattern altitude within 200 feet, heading within 20 degrees, and airspeed within 15 knots. The student must also be knowledgeable in ATC light signals and cockpit management.

Stage 1 / Module 6
Date of Completion:
Signature:
Time Flown:

Minimum 141 Requirements: Dual

1.0 hour flight,1.5 hours ground instruction

Ground Training

Objective:

For the student to gain an understanding of the hazardous flight conditions that affect helicopter flight.

Content:

Vortex ring state
Development
Lead up flight conditions
Symptoms
Recovery
Tail rotor
Ground resonance
Causes of ground resonance
Factors—rotor head vibrations/fuselage
Recovery actions
Blade sailing
Dynamic rollover
Factors in critical angle
Cyclic limitations
Mast bumping
Avoiding
Recovery from low and zero G
Exceeding rotor rpm limits
Reasons for high rotor rpm limits
Reasons for low rotor rpm limits
Rotor stalls—recovery from low rotor rpm

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

Principles of Helicopter Flight, 2nd Edition, Chapter 19

1. 1	

Flight Training

Objective:

For the student to be introduced to maximum performance takeoffs and steep approaches as well as the conditions for dynamic rollover and low G situations. Operational interpretation of weather data will also be stressed.

Content:

- ____ Obtaining weather (Go/no go)
- ____ Preflight
- ____ Dynamic rollover
- ____ Low G conditions
- ____ Normal/crosswind takeoff and departure
- ____ Hover taxi
 - _____ Vertical takeoff and landings
 - Ground reference maneuvers
- ____ Pattern work
 - ____ Maximum performance takeoff
- ____ Steep approach
- ____ Normal/crosswind approach and landing
- ____ Postflight procedures

Completion Standards:

This module is complete when the student knows the correct procedure for maximum performance takeoffs and steep approaches. The student should be able to fly the pattern within 200 feet altitude, 20 degrees heading and 15 knots airspeed. The student must also be able to enter and depart a normal traffic pattern.

Stage 1 / Module 7

Date of Completion: _

Signature:_

Minimum 141 Requirements: Dual

1.0 hour flight,
 1.5 hours ground instruction

Ground Training

Objective:

For the student to become familiar with airports and airport operations—along with the tools available for obtaining flight information.

Content:

____ Airport operations

- _____ Types of airports/heliports
 - _____Sources for airport data
 - _____ Airport/heliport markings and signs
 - _____ Airport/heliport lighting Wind direction indicators
 - Radio communication
 - ATC services and radar
 - Wake turbulence
- Collision avoidance

Flight information

- _____ Airport/Facility Directory
- _____ Aeronautical Information Manual
- _____ Federal aviation regulations
- _____Pilot/Controller Glossary
- Advisory circulars

Completion Standards:

This lesson is complete when the student has successfully completed the assigned reading.

Assignment:

FAA-H-8083-25, Chapter 12 *AIM*, Chapter 2—Section 3 *A/FD*



Flight Training

Objective:

For the student to become proficient with normal and crosswind takeoffs and landings, and to become familiar with wake turbulence procedures. The student will also be introduced to steep approaches.

Content:

- ____ Obtaining weather
- ____ Preflight
- _____ Performance charts for takeoff
- _____ Airport/Heliport markings and signs
- ____ Air taxi
- _____ Surface taxi
 - ____ Normal and crosswind takeoffs and approaches
- ____ Hovering
- ____ Pattern operations
- _____ Vertical takeoff and landings
- ____ Steep approaches
- ____ Emergency approaches
- _____ Wake turbulence procedures
- _____ Go-around procedures
- _____ Postflight procedures

Completion Standards:

This module is complete when the student can operate proficiently in traffic patterns and can takeoff and land being the sole manipulator of the controls. The student should have an understanding of when different taxi methods are used.

Stage 1 / Module 8	
Date of Completion:	
Signature:	
Time Flown:	

Minimum 141 Requirements: Dual

1.0 hour flight,1.5 hours ground instruction

Ground Training

Objective:

For the student to gain an understanding of aviation charts, the airspace system and NTSB reporting requirements.

Content:



Completion Standards:

This lesson is complete when the student has successfully completed the assigned reading.

Assignment:

AIM, Chapter 3; NTSB 830 (49 CFR Part 830)

Flight Training

Objective:

To introduce the student to straight-in autorotations. This lesson will also introduce control related malfunctions.

Content:

- ____ Obtaining weather
- Preflight
- Radio communications
- ____ Hover taxi
- _____ Vertical takeoffs and landings
- _____ Normal departure and approach
- _____ Hovering maneuvers
- Straight-in autorotation with power recovery
 - Control malfunctions
 - flight control/trim
 - rotor and/or antitorque
 - frequency vibrations and components that may be affected
- Go-arounds
- _____ Traffic pattern operations

____ Postflight

Completion Standards:

This module is complete when the student can operate in all phases of flight within 200 feet altitude, 20 degrees heading, 15 knots airspeed.

Stage 1 / Module 9

Date of Completion:

Signature:_

Minimum 141 Requirements: Dual

1.0 hour flight, 1.0 hour ground instruction

Ground Training

Objective:

For the student to gain an understanding of the underlying principles of retreating blade stall and autorotation.

Content:

_ Retreating BI	ade Stall
	Effect of increasing airspeed on stall angle
	Factors affecting the advancing blade
	Symptoms of retreating blade stall
	Recovery
	Factors influencing V _{NE}
Autorotation	
	Initial aircraft reaction
	Lift/Drag ratio and forces involved
	Autorotation and airspeed
	Autorotation range and endurance
	Touchdown
	Loss of power at low heights
	Rotor rpm decay when the engine fails

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

Principles of Helicopter Flight, 2nd Edition, Chapters 17 and 18

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Flight Training

Objective:

For the student to gain proficiency with emergency operations. The student will be introduced to techniques for settling with power and power failure at altitude. The student will also learn to perform rapid decelerations.

Content:

- Obtaining weather
- ____ Preflight
- ____ Ground resonance
- _____ Wire strike avoidance
- _____ Surface taxi (wheels)
- Air taxi
- Normal takeoffs and approaches
- ____ Hovering patterns
- _____ Vertical takeoff and landings
- ____ Settling with power
- _____ Power failure at altitude
- _____ Straight-in autorotation with power recovery
- Rapid deceleration
- Go-arounds

Completion Standards:

This module is complete when the student is able to recognize the onset of settling with power and take appropriate action.

Stage 1 / Module 10
Date of Completion:
Signature:
Time Flown:

Ground Training

Objective:

To introduce the student to the Federal Aviation Regulations with emphasis on how the regulations are organized and how to find information. The instructor should also identify which parts are required for Private Pilot Rotorcraft knowledge.

Content:

 FAR publication
 14 CFR Part 1

- _____ 14 CFR Part 61
- _____ 14 CFR Part 91

Completion Standards:

This lesson is complete when the student completes the quiz on regulations on Appendix Page 1-1 of this book.

Assignment:

14 CFR, Parts 61 and 91

Minimum 141 Requirements: Dual

1.0 hour flight,
 1.5 hours ground instruction

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Flight Training

Objective:

This lesson will focus on systems emergencies and equipment malfunctions. The student will also continue practicing previously learned emergency operations in preparation for solo flight.

Content:

- ____ Obtaining weather
- ____ Preflight
- _____ Vertical takeoffs and landings
- _____ Normal takeoff and climb
- ____ Normal approach
- _____ Straight-in autorotation with power recovery
- _____ Power failure at a hover
- ____ Partial power failure
- _____ Systems emergencies

Engine/oil and fuel

Power train failure

_____ Hydraulic, if applicable

Electrical

_____ Carburetor or induction icing

_____ Smoke and/or fire

Pitot static/vacuum and associated flight instruments, if applicable

- Abnormal vibrations
- Warning lights
- Other emergencies specific to the training helicopter

Postflight

Completion Standards:

This module is complete when the student performs the correct emergency procedures for the items listed, exhibits basic troubleshooting knowledge and executes recovery actions as needed. Flight must be maintained within 200 feet, 15 degrees and 15 knots. Autorotation airspeed should be within 10 knots.

Stage 1 / Module 11

Date of Completion: _

Signature:_

Minimum 141 Requirements: Dual

1.0 hour flight,
 1.5 hours ground instruction

Ground Training

Objective:

For the student to gain an understanding of weather briefings, operational weather factors, and insight into making the go/no-go decision.

Content:

____ Weather theory

- Nature of the atmosphere

 The cause of atmospheric circulation

 Atmospheric stability

 Air masses

 Fronts

 Turbulence

 Windshear

 Thunderstorms

 Microbursts

 Obtaining a weather briefing
- ____ METARs, TAFs
- _____ Making the go/no-go decision

Completion Standards:

This lesson is complete when the student has successfully completed all the assigned reading.

Assignment:

FAA-H-8083-25, Chapter 10



Flight Training

Objective:

For the student to review previously learned maneuvers with emphasis on weak areas. This module will prepare the student for solo flight.

Content:

- _ Obtaining weather
- Preflight inspection and aircraft documents
- ATC light signals
- Surface taxi
- ____ Hover taxi
- ____ Air taxi
- Hovering patterns
- _____ Vertical takeoff and landing
- ____ Normal and crosswind takeoffs and landings
- ____ Traffic pattern
- ____ Go-arounds
- ____ Power failure at altitude
- _____ Power failure at a hover
- _____ Settling with power
- ____ Low rotor rpm recovery
- _____ Partial power failure
- ____ Postflight

Completion Standards:

This module is complete when the student is comfortable with all of the pre-solo maneuvers including emergencies and can conduct all with minimum assistance from the flight instructor. Flight must be maintained within 200 feet, 15 degrees and 15 knots.

Stage 1 / Module 12
Date of Completion:
Signature:
Time Flown:

Ground Training

Objective:

To conduct a pre-solo briefing and complete, grade and review the pre-solo exam.

Content:

- ____ Solo limitations
- ____ Club rules
- Pre-solo exam

Completion Standards:

This lesson is complete when the student has passed the pre-solo exam with a minimum score of 80%, and reconciled to 100%.

Minimum 141 Requirements: Dual

0.5 hour flight,0.5 hour solo,0.5 hour ground instruction

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Flight Training

Objective:

Prior to this module the student will have passed the pre-solo written test. The intent of this module is for the student to first conduct supervised solo flight and then to practice solo takeoffs and landings in the pattern.

Content:

Dual flight

Obtaining weather

- _____ Verify the requirements of SFAR 73 2(b)(3) have been met (if applicable)
- Preflight
- Vertical takeoffs and landings
- ____ Hover taxi
- ____ Air taxi
- ____ Normal and crosswind takeoffs and landings
- ____ Climbs and approaches
- ____ Go-around
- _____ Traffic pattern operations
- ____ Instructor endorsement

Supervised solo

- ____ Normal takeoff
- ____ Stationary hover
- ____ Hover taxi
- ____ Air taxi
- ____ Traffic pattern
- _____ Vertical takeoffs and landings
- ____ Climbs and approaches

Completion standards:

This module is complete when the student is signed off for solo work, and the student has successfully accomplished solo flight. Flight must be maintained within 150 feet, 15 degrees, 15 knots while performing the maneuvers listed in the content of this module.

Stage 1 / Module 13

Date of Completion:

Signature:

Stage 1 / Module 14 and Stage Check

Lesson Time: Dual 1.0 hour flight, or whatever is necessary to meet objective

1.0 hour ground instruction, or whatever is necessary to meet objective



Flight Training

Objective:

For the chief flight instructor or designee to review the student's progress. If student performance is satisfactory, training can progress to stage 2 and solo operations away from the traffic pattern permitted.

Content:

- ____ Obtaining weather
- _____ Preflight inspection and aircraft documents
- ____ Cockpit management
- _____ Radio communication and ATC light signals
- ____ Pre-takeoff checks
- _____ Surface taxi
- ____ Hover taxi
- ____ Air taxi
- _____ Normal and crosswind takeoffs and landings
- _____ Straight and level flight; turns in both directions
- _____ Straight-in autorotation with power recovery
- _____ Climbs and climbing turns
- _____ Airport traffic patterns
- ____ Power failure
- _____ Settling with power
- ____ Low rotor rpm recovery
- _____ Rapid decelerations
- _____ Partial power failure
- _____ Collision avoidance, wake turbulence
- _____ Equipment malfunctions
- ____ Go-arounds
- ____ Postflight

Completion Standards:

This module is complete when the student can conduct the flight tasks competently enough to leave the pattern. Altitude should be within 150 feet, heading 15 degrees and airspeed 15 knots throughout maneuvering. During hover, altitude should be within 5 feet and ground track kept within 5 feet. Autorotation maneuvers should be stopped within 150 feet of a specified point.

Stage 1 / Module 14
Date of Completion:
Signature:
Time Flown:
Stage Exam Score:
Stage Check Successful:

Instructor Note: Follow the formats below when signing-off endorsements for your students. (From AC 61-65E)

1. Endorsement for pre-solo requirements in Robinson helicopters SFAR 73 2(b)(3) (valid for 90 days)

I certify that *(First name, MI, Last name)* has satisfactorily met the experience or training requirements required by SFAR 73 2(b)(3). I have determined he/she has demonstrated the proficiency required by SFAR 73 2(b)(3) and is proficient to make solo flights in a *(model of Robinson)*.

[date] J. Jones 987654321 CFI [expiration date]

2. Endorsement for Pilot in Command in Robinson helicopters for pilots with less than 200 hours: SFAR 73 2(b)(1) or (2)

I certify that ______ (*First name, MI, Last name*) has satisfactorily met the experience or training requirements required by SFAR 73 2(b)(1) or (2). I have determined he/she has demonstrated the proficiency required by SFAR 73 2(b)(1 or (2)) and is proficient to act as Pilot in Command in a ______ (*model of Robinson*).

[date] J. Jones 987654321 CFI [expiration date]

3. Endorsement for pre-solo aeronautical knowledge: 14 CFR §61.87(b)

I certify that ______ (*First name, MI, Last name*) has satisfactorily completed the pre-solo knowledge exam required by §61.87(b) for the (make and model aircraft).

[date] J. Jones 987654321 CFI [expiration date]

4. Endorsement for pre-solo flight training: 14 CFR §61.87(c)

I certify that ______ (*First name, MI, Last name*) has received the required pre-solo training in a ______ (*make and model aircraft*). I have determined he/she has demonstrated the proficiency required by §61.87(d) and is proficient to make solo flights in ______ (*make and model aircraft*).

[date] J. Jones 987654321 CFI [expiration date]

5. Endorsement for solo flight (first 90 day period): 14 CFR 61.87 (n)(2)

I certify that ______(*First name, MI, Last name*) has received the required training to qualify for solo flying. I have determined he/she meets the applicable requirements of section 61.87(n) and is proficient to make solo flights in a ______(*make and model aircraft*)

[date] J. Jones 987654321 CFI [expiration date]

6. Endorsement for solo (each additional 90-day period): 14 CFR §61.87(p)

I certify that ______ (*First name, MI, Last name*) has received the required training to qualify for solo flying. I have determined he/she meets the applicable requirements of §61.87(p) and is proficient to make solo flights in ______ (*make and model aircraft*).

[date] J. Jones 987654321 CFI [expiration date]

7. Endorsement for solo flight in the Class B airspace: 14 CFR §61.95(a)

I certify that ______ (*First name, MI, Last name*) has received the training required by §61.95(a). I have determined he/she is proficient to conduct solo flights in ______ (*name of Class B*) airspace. (*List any applicable conditions or limitations.*)

[date] J. Jones 987654321 CFI [expiration date]

8. Endorsement for solo flight to, from, or at an airport located within Class B airspace: 14 CFR §61.95(a) and §91.131(b)(1)

I certify that ______ (*First name, MI, Last name*) has received the training required by §61.95(a)(1). I have determined that he/she is proficient to conduct solo flight operations at ______ (*name of airport*). (*List any applicable conditions or limitations.*)

[date] J. Jones 987654321 CFI [expiration date]

Reminder: Instructor will need to endorse student pilot certificate.

Stage 2 Advanced Maneuvers and Solo Practice

Objective

In this stage the student begins building on the foundation of basic skills. Stage 2 flight training focuses on advanced maneuvers with some review of primary maneuvers as necessary.



Ground Training

- Flying for range and endurance
- Stability
- Weather reports and forecasts
- Flight Computer



Flight Training

- Maximum performance takeoffs and landings
- · Advanced technique takeoffs and landings
- Emergency conditions

Completion Standards

Stage 2 is complete when the student achieves the objective of each lesson and can list or describe the correct process or reference for accomplishing elements, exercises and activities. Students shall score at least 80% on the Stage 2 exam with all deficient areas reconciled to 100%.

Stage 2 / Module 1 and Solo



Flight Training

Objective:

For the student to practice previously learned maneuvers in solo flight. The flight tasks listed represent options for the instructor to choose from in assigning maneuvers. These may vary depending upon weather, student proficiency or other factors. Instructors should review tasks that should not be practiced solo:

- 1. Autorotation
- 2. Simulated forced landings
- 3. Settling with power
- 4. Recovery from low rpm
- 5. Low G maneuvers

Content:

- ____ Vertical takeoffs to a hover
- _____ Hovering patterns
- ____ Stationary hover
- Surface taxi
- ____ Hover taxi
- ____ Air taxi
- ____ Normal and crosswind takeoffs
- Traffic patterns
- ____ Climbs and normal approaches
- ____ Go-around

Completion Standards:

This module is complete when the student has successfully completed the solo flight.

Stage 2 / Module 1	
Date of Completion:	
Signature:	
Time Flown:	

Minimum 141 Requirements: Dual

0.5 hour flight,1.0 hour ground instruction

Ground Training

Objective:

For the student to gain an understanding of the factors involved in flying for range and endurance. The student will also learn the elements of specialty takeoffs and landings and learn about sloped surface operations, sling loads and stability.

Content:

- Power
- _____ Total horsepower required curve
- ____ Flying for range
- Flying for endurance
- ____ Stability
- ____ Out-of-wind takeoffs and landings
- Different types of takeoffs and landings
 - Downwind takeoffs and landings
 - ____ Running takeoff
 - _____ Cushion-creep takeoff
 - Confined area takeoff
 - Maximum performance takeoff
 - Running landing
 - The zero speed landing
 - Operations on sloping surfaces
- Sling operations

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

Principles of Helicopter Flight, 2nd Edition, Chapters 13, 21, and 22

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Flight Training

Objective:

This lesson begins paving the way toward more demanding kinds of operations. The student is introduced to maximum performance takeoff and climbs, rolling and running takeoffs and shallow approaches with running/roll-on landings.

Content:

- ____ Preflight
- _____ Review of maneuvers as needed
- _____ Maximum performance takeoffs and climbs
- _____ Hovering autorotation
- _____ Steep approaches
- Rolling and running takeoffs
- Shallow approach and running/roll-on landings
- Introduction to 180 degree autorotation
- Postflight

Completion Standards:

This module is complete when the student understands the operational considerations for using maximum performance takeoffs and landings. The student should also have a solid understanding of the techniques used for these maneuvers.

Recommended reading:

FAA-H-8083-21, Chapter 10 (1-6)

Stage 2 / Module 2

Date of Completion: _

Signature:_
Stage 2 / Module 3 and Solo



Flight Training

Objective:

For the student to continue practicing Stage 1 maneuvers. The flight tasks listed represent options for the instructor to choose from in assigning the maneuvers. These may vary depending upon weather, student proficiency or other factors.

Content:

- ____ Preflight
- _____ Vertical takeoffs to a hover
- _____ Hovering patterns
- ____ Stationary hover
- _____ Surface taxi
- ____ Hover taxi
- ____ Air taxi
- _____ Normal and crosswind takeoffs
- _____ Traffic patterns
- _____ Climbs and normal approaches
- ____ Go around
- ____ Postflight

Completion Standards:

This module is complete when the student has successfully completed the solo flight.

Stage 2 / Module 3
Date of Completion:
Signature:
Time Flown:

Minimum 141 Requirements: Dual

1.0 hour flight,
 2.0 hours ground instruction

Ground Training

Objective:

For the student to learn how to interpret weather reports, forecasts and charts.

Content:

Observations	Observations	
Service outlets		
	FSS	
	TIBS	
	DUATS	
	EFAS	
HIWAS		
	TWEB	
Weather briefing	S	
Reports		
X	METARS	
	PIREPS	
	SD	
Forecasts		
	TAFs	
	Area forecasts	
	In-flight advisories	
	AIRMET	
	SIGMET	
	WST	
	FD	
	Weather charts	
	Surface analysis	
	Weather depiction	
	Radar summary	
	Prognostic charts	

Completion Standards:

This lesson is complete when the student has successfully completed the assigned reading.

Assignment:

FAA-H-8083-25, Chapter 11

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Flight Training

Objective:

For the student to learn the elements of confined area operations. Proficiency will also be increased in maximum performance takeoffs and climbs as well as steep approaches.

Content:

- Preflight
- ____ Rolling takeoff
 - ____ Maximum performance takeoff and climb
- ____ Steep approaches
- Confined area operations—approach and departure
- High and low reconnaissance
- Shallow approach and running/roll-on landing
- ____ Retreating blade stall—Discussion
- ____ Autorotations
- ____ Recognition and recovery from low rotor rpm
- _____ Partial power failure
- Traffic pattern operations
- ____ Postflight

Completion Standards:

This module is complete when the student understands the elements and techniques for conducting rolling takeoffs. The student should also have an understanding of the factors involved in confined area operations, including high and low reconnaissance. During both maneuvers rpm should be kept within normal limits.

Recommended reading:

FAA-H-8083-21, Chapter 11 (5-9)

Stage 2 / Module 4

Date of Completion: _

Signature:_

Time Flown:_

Stage 2 / Module 5 and Solo



Flight Training

Objective:

In this module the student will continue practicing instructor assigned maneuvers in addition to the advanced maneuvers listed. The flight tasks listed represent options for the instructor to choose from in assigning the maneuvers. These may vary depending upon weather, student proficiency or other factors.

Content:

- ____ Preflight
- _____ Vertical takeoffs to a hover
- ____ Hovering patterns
- _____ Hovering turns
- _____ Stationary hover
- _____ Surface taxi
- ____ Hover taxi
- ____ Air taxi
- _____ Normal and crosswind takeoffs
- ____ Traffic patterns
- ____ Climbs and normal approaches
- ____ Go-around
- ____ Postflight
- Advanced maneuvers for practice:
- ____ Steep approaches
- ____ Rapid deceleration
- _____ Maximum performance takeoff and climb

Completion Standards:

This module is complete when the student has successfully completed the solo flight.

Stage 2 / Module 5	
Date of Completion:	
Signature:	
Time Flown:	

Minimum 141 Requirements: Dual

1.0 hour flight,
 1.0 hour ground instruction

Ground Training

Objective:

For the student to learn the functionality of the flight computer and practice solving time, speed, distance and fuel problems.

Content:

- ____ Introduction
- _____ Time, speed distance
- ____ Fuel consumption
- ____ Conversions
- _____ True airspeed and density altitude
- _____ Using the wind side
- ____ Sample problems

Completion Standards:

This lesson is complete when the student has successfully completed the sample problems in the flight computer manual.

Assignment:

The flight computer user manual

CO X

Flight Training

Objective:

For the student to learn about emergency operations such as dynamic rollover. An instructor discussion should cover the listed topics. The student will also be introduced to pinnacle/platform and slope operations and continue to practice advanced maneuvers.

Content:

- Preflight
- ____ Normal takeoff to a hover
- ____ Hovering patterns
 - ____ Emergency conditions—discussion
 - ____ Dynamic rollover
 - Ground resonance
 - ____ Low G conditions
 - Low rotor rpm
 - ____ Anti-torque system failure
 - Slope operations
- Maximum performance takeoff and climb
- ____ Pinnacle/platform operations
- Rapid deceleration
- ____ Steep approach
- 180 degree autorotation
- ____ Postflight

Completion Standards:

This module is complete when the student understands the factors involved in slope operations. The transition from slope to stabilized hover should be smooth with heading control within 15 degrees. The student should also know the recovery procedure for each emergency situation.

Recommended reading:

FAA-H-8083-21, Chapter 10 (7-9)

Stage 2 / Module 6

Date of Completion:

Signature:_

Time Flown:__

Stage 2 / Module 7 and Solo



Flight Training

Objective:

For the student to practice new solo maneuvers along with what the instructor assigns. The flight tasks listed represent options for the instructor to choose from in assigning the maneuvers.

Content:

- ____ Preflight
- _____ Vertical takeoffs to a hover
- _____ Hovering patterns
- _____ Hovering turns
- ____ Stationary hover
- Surface taxi
- ____ Hover taxi
- ____ Air taxi
- _____ Normal and crosswind takeoffs
- ____ Traffic patterns
- ____ Climbs and normal approaches
- ____ Go-around
- ____ Postflight

Advanced maneuvers:

- ____ Steep approaches
- ____ Rapid deceleration
- _____ Maximum performance takeoff and climb

Completion standards:

This module is complete when the student has successfully completed the solo flight.

Stage 2 / Module 7
Date of Completion:
Signature:
Time Flown:

Stage 2 / Module 8 and Stage Check

Lesson Time: Dual 1.0 hour flight, or whatever is necessary to meet objective

1.0 hour ground instruction, or whatever is necessary to meet objective

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Flight and Ground Training

Objective:

For the chief flight instructor or designee to review the student's progress. If student performance is satisfactory, training can progress to Stage 3 for cross-country training.

Content:

- Preflight Maximum performance takeoff and climb
- _____ Slope operations
- Confined area operations
- Pinnacle/platform operations
- Collision avoidance
- Rolling takeoff (wheels)
- ____ Running takeoff
- _____ Steep approach
- _____ 180 degree autorotation
- _____ Shallow approach and running/roll-on landing
- ____ Rapid deceleration
- ____ Emergencies

_____Retreating blade stall

- ____ Dynamic rollover
- ____ Ground resonance
- Low G conditions Low rotor rpm and blade stall
- Go-around

____ Postflight

Completion Standards:

This module is complete when the student performs the maneuvers using proper procedures. Straight and level maneuvering altitude should be kept within 150 feet, heading 10 degrees and airspeed 10 knots. During hover, altitude should be kept within 5 feet and ground track kept within 5 feet. The student should have a complete understanding of the listed emergency tasks and their recovery procedures.

Stage 2 / Module 8
Date of Completion:
Signature:
Time Flown:
Stage Exam Score:
Stage Check Successful:

Stage 3 Cross-Country Flight

Objective

The objective of Stage 3 is for the student to gain knowledge and experience in the following:



Ground Training

- Aeromedical factors
- Night flying
- Flight planning
- Radio navigation: VOR, ADF, radar, transponder, DME, RNAV
- Enroute navigation



Flight Training

- Pre-cross-country maneuvers (per 14 CFR §61.93)
- Cross-country flight planning
- The required dual and solo cross-country time

Completion Standards

Stage 3 is complete when the student achieves the objective of each lesson, and can list or describe the correct process or reference for accomplishing elements, exercises and activities. Student shall score at least 80% on the Stage 3 Exam, and all deficient areas shall be reconciled to 100%.

Minimum 141 Requirements: Dual

1.0 hour flight,
 1.5 hours ground instruction

Ground Training

Objective:

For the student to learn about aeromedical factors as well as the elements involved in night flying.

Content:

____ Aeromedical factors

- _____ Medical certificates
- _____Health factors
- _____Hypoxia
- _____ Hyperventilation
- _____ Middle ear and sinus problems
- _____ Spatial disorientation/illusions
- _____Motion sickness
- ____Carbon monoxide
- _____ Stress and fatigue
- _____ Dehydration
- _____ Alcohol/drugs
- _____ Scuba diving
- _____ Vision

____ Night operations

- ____ Controlled flight into terrain
- Physiology
- Vision
- _____ Aircraft lighting
- _____ Visual illusions
- _____ Autokinesis
- _____Night myopia
- _____ False horizon
- _____ Landing illusions
- _____ Night flight

Completion Standards:

This lesson is complete when the student has completed the assigned reading.

Assignment:

FAA-H-8083-25, Chapter 15 *FAA-H-8083-21*, Chapter 13

Flight	Training

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Objective:

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For the student to learn about the elements involved in night flying and to gain experience with night operations.

Content:

- _____ Weather briefing
- ____ Night physiology ____ Night preflight inspection
- _____ Night prenight inspection
- Lighting and equipment
- _____ Use of charts/obstructions and minimum altitudes
- ____ Normal and crosswind takeoffs and approaches
- _____ Vertical takeoffs and landings
- ____ Hovering maneuvers
- ____ Postflight

Completion Standards:

This module is complete when the student understands the considerations affecting night operations and has gained experience flying at night.

Stage 3 / Module 1

Date of Completion: _

Signature:

Time Flown:_

Minimum 141 Requirements: Dual cross-country 1.5 hours flight,

2.0 hours ground instruction

Ground Training

Objective:

To introduce the student to the tools and concepts used in planning for cross-country flight.

Content:

- Charts Time zones
- Variation
- Deviation
- Effect of wind
- Calculations—time, speed, distance
- Computers and plotters
- Pilotage
- ____ Dead reckoning
- ____ Wind vectors

_____ Flight planning

- Publications including POH
- Plotting a course
- ____ Flight log
- ____ Flight plans

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

FAA-H-8083-25, Chapter 14

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Flight Training

Objective:

For the student to learn the concepts of cross-country flying. Because there is a lot of new material, instructors may choose to conduct a 1 hour non-flying lesson to cover the necessary background information. This information is contained under the topic "cross-country discussion." In this lesson the student will become familiar with navigating by means of pilotage and dead reckoning.

Content:

- _____ Weight and balance
- _____ Emergency equipment and survival gear
 - ____ Cross-country discussion
 - _____ Flight publications
 - ____ NOTAMs
 - _____ Flight Service
 - Flight following and radar services
 - Two way communications
 - Airspace system
 - Plotting course
 - _____Flight log
 - Weather
 - _____ Filing flight plan
 - Flight computer
 - Preflight
- Cross-country flight
- ____ Performance charts
- ____ Use of flight log
- ____ Flight plan
- ____ Pilotage
- ____ Dead reckoning with use of compass
- ____ Traffic pattern procedures including arrival, departure and approach
- ____ Collision avoidance
- ____ Emergency procedures
- ____ Postflight

Completion Standards:

This module is complete when the student is able to satisfactorily complete the pre-flight planning for cross-country flight. The student should show competent weather analysis and be able to fly a pre-planned route using pilotage and dead reckoning. Altitude should be within 250 feet, heading within 15 degrees.

	_
Stage 3 / Module 2	
Date of Completion:	
Signature:	
Time Flown:	
	-

Minimum 141 Requirements: Dual

1.0 hour flight,2.0 hours ground instruction

Ground Training

Objective:

For the student to gain a practical understanding of radio navigation using the VOR, ADF, DME, Transponder and GPS.

Content:

Navigation aids			
VOR			
VOR/DME, TACAN and VORTAC			
Course deviation indicator			
TO/FROM arrow			
VOR receiver check			
Orientation			
Course intercept			
Tracking			
NDB and ADF			
ADF and heading indicator			
NDB range, accuracy, identification			
ADF control panel			
ADF relative bearing indicator (RBI)		
ADF radio magnetic indicator			
Orientation			
Course intercept			
Tracking			
Radar			
Transponder			
DME			
GPS			
VHF Direction Finding			

Completion Standards:

This lesson is complete when the student has successfully completed the assigned reading.

Assignment:

FAA-H-8083-25, Chapter 14

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Flight Training

Objective:

For the student to understand the principles of radio navigation using VOR, ADF and/or GPS. The student will also learn how to divert from a flight plan and how to proceed after becoming lost.

Content:

Preflight	
VOR exercises:	
Plotting a course using VOR radials VOR radio operation including signal loss VOR intercept and tracking drills including station passage	g
ADF exercises:	
Principle of bearings and ADF display	
Operating the ADF	
ADF homing drills	
GPS	
Locating position	
Lost procedures and radar services	
Pilotage	
Diversion procedures	
Alternate selection Estimate of heading, groundspeed, ETA an	d
fuel	
Postflight	

Completion Standards:

This module is complete when the student understands the principles of radio navigation. The student should be able to track a VOR radial, know how to divert safely and know how to handle becoming lost. Altitude should be within 250 feet, heading within 15 degrees.

Stage 3 / Module 3

Date of Completion: _

Signature:

Time Flown:_

Minimum 141 Requirements: Dual cross-country

1.5 hours flight,
 1.0 hour ground instruction

Ground Training

Objective:

For the student to gain a practical understanding of the principles involved in enroute navigation.

Content:

Enroute navigation		
Compensating for wind effect		
Departure from an airport		
Cruise		
Chart-reading in flight		
Chart orientation in the airplane		
Log keeping		
Navigation techniques		
Ground speed checks		
Heading corrections		
Diversions		
En-route diversions		
Diversions to an alternate		
Lost procedures		
Emergency Locator Transmitter (ELT)		

Completion Standards:

This lesson is complete when the student has successfully completed the assigned reading.

Assignment:

FAA-H-8083-25, Chapter 14

<u>Ö</u>

Flight Training

Objective:

To introduce the student to cross-country operations at night. In this module instructors may want to consider taking students through more diverse airspace than they are already familiar with.

Content:

- ____ Weather analysis including estimation of in-flight visibility
- Flight publications
- Use of aircraft performance charts pertaining to cross-country flight
- _____ Recognition/avoidance of hazardous terrain
- _____ Servicing helicopter away from home base
- ____ Preflight
- ____ Navigation
- ____ Pilotage
- ____ Dead reckoning
- _____Radio navigation
- Night cross-country operations
 - CFIT/planning
 - Physiological factors
 - Lighting and equipment
 - Cockpit management
 - Emergencies
- Diversion to alternate
- Steep approach
- Rolling takeoff (wheels)
- Running takeoff
- Shallow approach and running/roll-on landing
- Go-around
- ____ Postflight

Completion Standards:

This module is complete when the student is competent to fly solo cross-country. The student should be able to accurately interpret weather information, plan a trip and fly as planned. Altitude should be within 200 feet, heading 15 degrees. Arrival at checkpoints should be within 5 minutes of estimate and helicopter's position verified within 3 nautical miles of planned route. Differences in planning for fuel, heading and groundspeed should be recorded and corrected for.

Stage 3 / Module 4
Date of Completion:
Signature:
Time Flown:

1. Endorsement for initial solo cross-country flight: 14CFR §61.93 (c)(1)

I certify that ______(*First name, MI, Last name*) has received the required solo crosscountry training. I find he/she has met the applicable requirements of section 61.93, and is proficient to make solo cross-country flights in a _____(*make and model aircraft*)

[date] J. Jones 987654321 CFI [expiration date]

2. Endorsement for each solo cross-country flight: 14 CFR §61.93(c)(2)

I have rev	iewed the cross-country planning of	(First name, MI, Last name). I find
the planni	ng and preparation to be correct to make the solo flight from	(location)
to	(destination) via	(route of flight) with landings at
	(name the airports) in a	(make and model aircraft) on
	(date). (List any applicable conditions or lim	itations.)

[date] J. Jones 987654321 CFI [expiration date]

Stage 3 / Module 5 and Solo X/C

Minimum 141 Requirements: Solo cross-country 1.5 hours flight



Flight Training

Objective:

For the student to gain the required experience in solo cross-country operations. Flight must be at least 50 NM.

Content:

- Cross-country planning
- Instructor endorsement
- ____ Preflight
- _____ Radio navigation
- ____ Pilotage
- ____ Dead reckoning
- _____ Flight log kept throughout flight
- At least one landing more than 50 NM from departure airport Postflight

Completion Standards:

This module is complete when the student can maintain flight within 200 feet, 15 degrees, and 10 knots, at all times. Crosscountry should be flown within 3 NM of the planned route. Arrival at enroute checkpoints should be within 5 minutes of the initial or revised ETA.

Stage 3 / Module 5	
Date of Completion:	
Signature:	
Time Flown:	

Stage 3 / Module 6 and Solo X/C

Minimum 141 Requirements: Cross-country

2.0 hours flight,0.5 hour ground instruction

Ground Training

Objective:

To complete the Stage 3 exam and review missed questions upon completion.

Content:

___ Stage 3 exam

Completion Standards:

Stage 3 exam must be passed with a minimum score of 80% and reconciled to 100%.

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Flight Training

Objective:

For the student to gain the required experience for the solo long cross-country. Flight must be at least 75 NM with landings at a minimum of three points and one segment of the flight must be at least 25 nautical miles between takeoff and landing locations.

Content:

- Cross-country planning
- Instructor endorsement
- Preflight
- _____ Radio navigation
- ____ Pilotage
- Dead reckoning
 Flight log kept throughout flight
- _____ Fright log kept throughout hight
- ____ At least one landing more than 50 NM from departure airport Postflight

Completion Standards:

This module is complete when the student has completed the crosscountry flight.

Stage 3 / Module 6

Date of Completion: _

Signature:_

Time Flown:_

Stage 3 / Module 7 and Stage Check

Instructor's note:

At the discretion of the Chief Flight Instructor, the Stage 3 check can be combined with the Stage 4 check.

Lesson Time: Dual 1.0 hour flight, or whatever is necessary to meet objective

1.0 hour ground instruction, or whatever is necessary to meet objective



Flight Training

Objective:

To review the student's ability to adequately prepare for and fly cross-country. The evaluation should include the student's ability to properly divert to an alternate as well as handle in-flight emergencies.

Content:

- Cross-country planning
 - Publications
 - Performance
 - Weather information and analysis
 - _____Plotting course/use of charts
 - _____ Flight log
 - _____ Filing flight plan
 - _____ Flight computer
 - ____ Weight and balance
- ____ Preflight
- ____ Cockpit management
- _____ Aeronautical decision making
- ____ Cross-country flight
 - ____ Departure
 - Flight log use
 - Navigation
 - _____Radio communications
 - _____ Postflight
- Emergencies including lost communication
- ____ Diversion procedures
- ____ Lost procedures
- ____ Collision avoidance
- ____ Postflight

Completion Standards:

This module is complete when the student has Private Pilot proficiency at cross-country operations. Flight must be within 200 feet, 15 degrees, and 10 knots at all times. Flight must be within 5 minutes of ETA and 3 NM of route throughout.

Stage 3 / Module 7
Date of Completion:
Signature:
Time Flown:
Stage Exam Score:
Stage Check Successful:

Stage 4 Preparation for Checkride

Objective

The objective of Stage 4 is for the student to gain knowledge and experience in the following:



Ground Training

- Aeronautical decision making
- Mountain flying
- Helicopter icing
- Private Practical Test Standards (PTS)
- Prep for checkride (oral)
- Take and pass the FAA Knowledge Exam



Flight Training

- The experience and knowledge required by the Private License
- Review all Private Rotorcraft maneuvers, performed according to PTS
- Sign-off for the Private Checkride

Completion Standards

Stage 4 is complete when the student achieves the objective of each lesson, and can list or describe the correct process or reference for accomplishing elements, exercises and activities. Student shall score at least 80% on the Stage 4 Exam, and all deficient areas shall be reconciled to 100%. Students must take and pass the FAA Private Knowledge Exam—Rotorcraft. At the completion of this stage, student is signed off to take the Private Pilot checkride.

Minimum 141 Requirements: Dual

1.0 hour flight (night), 1.0 hour ground instruction

Ground Training

Objective:

For the student to learn the elements of aeronautical decision making and to gain the knowledge necessary for mountain flying.

Content:

ADM		Content:
	The decision making process	Certificates and documents
	Risk management	Aircraft logbooks
	Factors affecting decision making	ATC light gun signals
	Hazardous attitudes	Minimum equipment list
	Stress management	Emergency equipment and survival gear
	Use of resources	Preflight
	Workload	Normal and crosswind takeoffs
	Situational awareness	Traffic patterns
	Operational pitfalls	Hovering maneuvers
Mountai	n flying	Forward, rearward, sidewa
	Updrafts and downdrafts	Hovering turns
	Thermal currents	Surface taxi
	Katabatic and anabatic winds	Hover taxi
	Mechanical turbulence	Air taxi
	Valley flying	Rapid deceleration
	Ridgeline flying	Postflight
	The standard mountain approach	
	General comments on mountain approaches	Completion Standards:
	Survival equipment	This module is complete when the student can pe
	Areas covered by snow and ice	maneuvers to PTS standards. At the conclusion of

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

FAA-H-8083-21, Chapter 14 Principles of Helicopter Flight, 2nd Edition, Chapter 23 Flight Training

Objective:

() A

To practice flight maneuvers in preparation for the practical test. Night landings that were not accomplished in Module 3 should be conducted in this module.

ard hovering

erform all the f this module night landings should total 10.

Stage 4 / Module 1	
Date of Completion:	
Signature:	
Time Flown:	

Minimum 141 Requirements: Dual

1.0 hour flight,0.5 hour ground instruction

Ground Training

Objective:

For the student to gain an understanding of the elements involved in helicopter icing and for the student to take the FAA Knowledge Exam.

Content:

____ Helicopter Icing

- Ice accretion
- Ice formation at different temperatures
- _____Electrical anti-icing
- ____ Consequences of ice accretion
- Engine intake icing

Completion Standards:

This lesson is complete when the student has successfully completed all review questions following the assigned reading.

Assignment:

Principles of Helicopter Flight, 2nd Edition, Chapter 24 Take FAA Private Pilot Rotorcraft Knowledge Exam

CO-X

Flight Training

Objective:

To practice flight maneuvers in preparation for the practical test.

Content:

- ____ Discussion elements
 - _____ Dynamic rollover Ground resonance
 - Low G conditions
 - Anti-torque system failure
- ____ Preflight
- _____ Review of weak areas
- _____ Hovering maneuvers
- _____ Rapid deceleration
- _____ Normal and crosswind approaches
- _____ Steep approaches
- Autorotations
 - ____ Straight-in
 - _____180 degree
 - _____ From a hover
- ____ System and equipment malfunctions
- ____ Postflight

Completion Standards:

This module is complete when the student can perform all the maneuvers to PTS standards.

Stage 4 / Module 2

Date of Completion:

Signature:_

Time Flown:_

Minimum 141 Requirements: Dual

1.0 hour flight, 1.0 hour ground instruction

Ground Training

Objective:

To prepare the student for the Practical Test

Content:

- _____ Review the Private Practical Test Standards (PTS)
- Review the maintenance logs and required inspections
- _____ Review pilot's logbook (identify training requirements if desired)
 - _ Review missed questions from FAA Knowledge Exam

Completion Standards:

This lesson is complete when student is prepared for the end of course check and is familiar with the PTS requirements for required maneuvers.

Assignment:

Review the Private Practical Test Standards (PTS)

Flight Training

Objective:

To practice flight maneuvers in preparation for the Practical Test.

Content:

- Preflight
- _____ Review of weak areas
- _____ Maximum performance takeoff and climb
- _____ Vertical takeoff and landing
- _____ Straight-in autorotation with power recovery
- _____ Hovering maneuvers
- _____ 180 degree autorotation
- _____ Power failure at a hover
- _____ Power failure at altitude
- _____ Systems and equipment malfunctions
 - _____ Settling with power
 - Low rotor rpm recovery
- _____ Slope operations
- ____ Confined area operations
- ____ Pinnacle/platform operations
- _____ Rolling takeoff (wheels)
- ____ Running takeoff
- _____ Shallow approach and running/roll-on landing
- ____ Postflight

Completion Standards:

This module is complete when the student can perform all the listed maneuvers to Practical Test Standards.

Stage 4 / Module 1
Date of Completion:
Signature:
Time Flown:

Stage 4 / Module 4 and End of Course Check

Minimum 141 Requirements: Dual 1.0 hour flight, or whatever is necessary to

meet objective 1.0 hour ground instruction, or whatever is necessary to

meet objective

Objective:

To review the applicant's readiness for the practical test. If the student shows weakness in some areas, additional instruction will be assigned as needed.

Content:

- ____ Certificates and documents
- ____ Aircraft logbooks
- _____ ATC light gun signals
- _____ Minimum equipment list
- _____ Emergency equipment and survival gear
- ____ Preflight
- ____ Cross-country operations
- Engine starting and rotor engagement
- Runway incursions
- Normal and crosswind takeoffs
- ____ Traffic patterns
- ____ Hovering maneuvers
 - Forward, rearward, sideward hovering
 - Hovering turns
 - _____ Surface taxi
 - Hover taxi
 - Air taxi
- Rapid deceleration
- Dynamic rollover
- Ground resonance
- Low G conditions
- Normal and crosswind approaches
- Steep approaches
- Maximum performance takeoff and climb
- Vertical takeoff and landing
- _____ Straight-in autorotation with power recovery
- _____ 180 degree autorotation
- _____ Power failure at a hover
- Power failure at altitude
- _____ Systems and equipment malfunctions
- _____ Settling with power
- ____ Low rotor rpm recovery
- ____ Slope operations
- ____ Confined area operations
- Pinnacle/platform operations
- ____ Rolling takeoff (wheels)
- Running takeoff
- _____ Shallow approach and running/roll-on landing
- ____ Postflight

Completion Standards:

This module is complete when the student performs all maneuvers to practical test standards (preferable better) and both instructors agree that the student is ready for the practical test.

Assignment:

Suggested reading: review *Helicopter Oral Exam Guide* Stage 4 Exam FAA Private Pilot Knowledge Exam

Stage 4 / Module 4

Date of Completion:

Signature:

Time Flown:__

Stage Exam Score: ____

Stage Check Successful: _

Private Pilot Endorsements

Instructor Note: Follow the formats below when signing-off endorsements for your students. (From AC 61-65E)

1. Aeronautical knowledge test: section 61.35(a)(1), 61.103 (d) and 61.105

I certify that ______ (*First name, MI, Last name*) has received the required training in accordance with section 61.105. I have determined he/she is prepared for the Private Pilot Rotorcraft knowledge test.

[date] J. Jones 987654321 CFI [expiration date]

2. Flight proficiency/practical test: section 61.103(f), 61.107(b) and 61.109

I certify that ______ (*First name, MI, Last name*) has received the required training in accordance with section 61.107 and §61.109. I have determined he/she is prepared for the Private Pilot Rotorcraft Practical Test.

[date] J. Jones 987654321 CFI [expiration date]

Confirm for the Checkride:

- Graded pre-solo written exam
- Current Student Pilot certificate
- Each solo cross-country endorsed
- □ 90-day current solo endorsement (if necessary)
- □ Student certificate endorsed by instructor
- □ Application form completely filled out
- □ Logbook and necessary supplies readily accessible
- □ Aircraft logbooks
- □ Materials necessary for planning a cross-country flight
- □ FAA Knowledge Exam results
- □ Identification with photo and signature
- □ Instructor endorsements for checkride
- Graduation certificate
- **D** Examiner's fee
- Current Medical



U.S. Department of Transportation Federal Aviation Administration

FAA Form 8710-1, Airman Certificate and/or Rating Application Supplemental Information and Instructions

Paperwork Reduction Act Statement:

The information collected on this form is necessary to determine applicant eligibility for airman ratings. We estimate it will take 15 minutes to complete this form. The information collected is required to obtain a benefit and becomes part of the Privacy Act system of records DOT/FAA 847, General Air Transportation Records on Individuals. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number associated with this collection is 2120-0021.

Privacy Act

The information on the accompanying form is solicited under authority of Title 14 of the Code of Federal Regulations (14 CFR), Part 61. The purpose of this data is to be used to identify and evaluate your qualifications and eligibility for the issuance of an airman certificate and/or rating. Submission of all requested data is mandatory, except for the Social Security Number (SSN) which is voluntary. Failure to provide all the required information would result in you not being issued a certificate and/or rating. The information would become part of the Privacy Act system of records DOT/FAA 847, General Air Transportation Records on Individuals. The information collected on this form would be subject to the published routine uses of DOT/FAA 847. Those routine uses are: (a) To provide basic airmen certification and qualification information to the public upon request. (b) To disclose information to the national Transportation Safety Board (NTSB) in connection with its investigation responsibilities. (c) To provide information about airmen to Federal, state, and local law enforcement agencies when engaged in the investigation and apprehension of drug violators. (d) To provide information about enforcement actions arising out of violations of the Federal Aviation regulations to government agencies, the aviation industry, and the public upon request. (e) To disclose information to another Federal agency, or to a court or an administrative tribunal, when the Government or one of its agencies is a party to a judicial proceeding before the court or involved in administrative proceedings before the tribunal.

Submission of your Social Security Number is voluntary. Disclosure of your SSN will facilitate maintenance of your records which are maintained in alphabetical order and cross-referenced with your SSN and airman certificate number to provide prompt access. In the event of nondisclosure, a unique number will be assigned to your file.

See Privacy Act Information above. Detach this part before submitting form.

Instructions for completing this form (FAA 8710-1) are on the reverse.

If an electronic form is not printed on a duplex printer, the applicant's name, date of birth, and certificate number (if applicable) must be furnished on the reverse side of the application. This information is required for identification purposes. The telephone number and E-mail address are optional.

Tear off this cover sheet before submitting this form.

FAA Form 8710-1 (4-00) Supersedes Previous Edition

NSN: 0052-00-682-5007

AIRMAN CERTIFICATE AND/OR RATING APPLICATION INSTRUCTIONS FOR COMPLETING FAA FORM 8710-1

I. APPLICATION INFORMATION. Check appropriate blocks(s). Block A. Name. Enter legal name. Use no more than one middle name for record purposes. Do not change the name on subsequent applications unless it is done in accordance with 14 CFR Section 61.25. If you do not have a middle name, enter "NMN". If you have a middle initial only, indicate "Initial only." If you are a Jr., or a II, or III, so indicate. If you have an FAA certificate, the name on the application should be the same as the name on the certificate unless you have had it changed in accordance with 14 CFR Section 61.25.

Block B. Social Security Number. Optional: See supplemental Information Privacy Act. Do not leave blank: Use only **US Social Security Number.** Enter either "SSN" or the words "Do not Use" or "None." SSN's are not shown on certificates.

Block C. Date of Birth. Check for accuracy. Enter eight digits; Use numeric characters, i.e., 07-09-1925 instead of July 9, 1925. Check to see that DOB is the same as it is on the medical certificate.

Block D. Place of Birth. If you were born in the USA, enter the city and state where you were born. If the city is unknown, enter the county and state. If you were born outside the USA, enter the name of the city and country where you were born.

Block E. Permanent Mailing Address. Enter residence number and street, P.O. Box or rural route number in the top part of the block above the line. The City, State, and ZIP code go in the bottom part of the block below the line. Check for accuracy. Make sure the numbers are not transposed. FAA policy requires that you use your permanent mailing address. Justification must be provided on a separate sheet of paper signed and submitted with the application when a PO Box or rural route number is used in place of your permanent physical address. A map or directions must be provided if a physical address is unavailable.

Block F. Citizenship. Check USA if applicable. If not, enter the country where you are a citizen.

Block G. Do you read, speak, write and understand the English language? Check yes or no.

Block H. Height. Enter your height in inches. Example: 5'8" would be entered as 68 in. No fractions, use whole inches only.

Block I. Weight. Enter your weight in pounds. No fractions, use whole pounds only.

Block J. Hair. Spell out the color of your hair. If bald, enter "Bald." Color should be listed as black, red, brown, blond, or gray. If you wear a wig or toupee, enter the color of your hair under the wig or toupee.

Block K. Eyes. Spell out the color of your eyes. The color should be listed as blue, brown, black, hazel, green, or gray.

Block L. Sex. Check male or female.

Block M. Do You Now Hold or Have You Ever Held An FAA Pilot Certificate? Check yes or no. (NOTE: A student pilot certificate is a "Pilot Certificate.")

Block N. Grade of Pilot Certificate. Enter the grade of pilot certificate (i.e., Student, Recreational, Private, Commercial, or ATP). Do NOT enter flight instructor certificate information.

Block O. Certificate Number. Enter the number as it appears on your pilot certificate.

Block P. Date Issued. Enter the date your pilot certificate was issued.

Block Q. Do You Now Hold A Medical Certificate? Check yes or no. If yes, complete Blocks R, S, and T.

Block R. Class of Certificate. Enter the class as shown on the medical certificate, i.e., 1^{st} , 2^{nd} , or 3^{rd} class.

FAA Form 8710-1 (4-00) Supersedes Previous Edition

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Block S. Date Issued. Enter the date your medical certificate was issued.

Block T. Name of Examiner. Enter the name as shown on medical certificate.

Block U. Narcotics, Drugs. Check appropriate block. Only check "Yes" if you have actually been convicted. If you have been charged with a violation which has not been adjudicated, check. "No".

Block V. Date of Final Conviction. If block "U" was checked "Yes" give the date of final conviction.

II. CERTIFICATE OR RATING APPLIED FOR ON BASIS OF: Block A. Completion of Required Test.

- 1. AIRCRAFT TO BE USED. (If flight test required) Enter the make and model of each aircraft used. If simulator or FTD, indicate.
- TOTAL TIME IN THIS AIRCRAFT (Hrs.) (a) Enter the total Flight Time in each make and model. (b) Pilot-In-Command Flight Time - In each make and model.

Block B. Military Competence Obtained In. Enter your branch of service, date rated as a military pilot, your rank, or grade and service number. In block 4a or 4b, enter the make and model of each military aircraft used to qualify (as appropriate).

Block C. Graduate of Approved Course.

- NAME AND LOCATION OF TRAINING AGENCY/CENTER. As shown on the graduation certificate. Be sure the location is entered.
- 2. AGENCY SCHOOL/CENTER CERTIFICATION NUMBER. As shown on the graduation certificate. Indicate if 142 training center.
- CURRICULUM FROM WHICH GRADUATED. As shown on the graduation certificate.
- DATE. Date of graduation from indicated course. Approved course graduate must also complete Block "A" COMPLETION OF REQUIRED TEST.

Block D. Holder of Foreign License Issued By.

- 1. COUNTRY. Country which issued the license.
- 2. GRADE OF LICENSE. Grade of license issued, i.e., private, commercial, etc.
- 3. NUMBER. Number which appears on the license.
- 4. RATINGS. All ratings that appear on the license.

Block E. Completion of Air Carrier's Approved Training Program.

- 1. Name of Air Carrier.
- 2. Date program was completed.
- 3. Identify the Training Curriculum.
- III. RECORD OF PILOT TIME. The minimum pilot experience required by the appropriate regulation must be entered. It is recommended, however, that ALL pilot time be entered. If decimal points are used, be sure they are legible. Night flying must be entered when required. You should fill in the blocks that apply and ignore the blocks that do not. Second In Command "SIC" time used may be entered in the appropriate blocks. Flight Simulator, Flight Training Device and PCATD time may be entered in the boxes provided. Total, Instruction received, and Instrument Time should be entered in the top, middle, or bottom of the boxes provided as appropriate.
- IV. HAVE YOU FAILED A TEST FOR THIS CERTIFICATE OR RATING? Check appropriate block.

V. APPLICANT'S CERTIFICATION.

- A. SIGNATURE. The way you normally sign your name.
- B. DATE. The date you sign the application.

TYPE OR PRINT ALL ENTRIES IN INK

R	DEPARTMENT O	OF TRANSPOR	TATION	Airn	nan C	Certif	icate	and/o	or Rat	ing Ap	oplica	tion				
I Applica Additi Flight Medic	tion Information onal Rating Instructor In al Flight Test	itial R	Student Airplane S enewal Reexamin	Gingle-Engin Reinstate ation	Recreation e ment	nal Airplan Reissuanc	Private Multiengin	e 🗌 ne 🗍 Additional	Commercia Rotorcraft Instructor R	al tating certificate	Airline Tr Balloon Ground I	nstructor	Airship	Glider	ent Power	ed-Lift
A. Name (La	ast, First, Middle)						B. SSN (US	Only)		C. Date of Bir Mont	th h Day	Year	D. Place of	Birth		
E. Address							F. Citizensh	ip	Other	Specify		G. Do you r the Engli	ead, speak, s sh language	write, & unde ??	rstand Yes	No
City, State,	Zip Code						H. Height		l. Weight		J. Hair		K. Eyes		L. Sex	e Iale
M. Do you r	ow hold, or have yo	u ever held a	an FAA Pilot	Certificate?			N. Grade Pil	lot Certificate	3	O. Certificate	Number			P. Date Issu	ed	
Q. Do you h Medical	old a Certificate?		Yes	Yes R. Class of (Certificate	No	S. Date Issu	ed			T. Name of E	Examiner				
U. Have you	ever been convicte	d for violatio	on of any Fee	deral or State	statutes rel	ating to narc	otic drugs, m	arijuana, or d	depressant or	stimulant drug	s or substand	ces?		V. Date of F	inal Convict	ion
II. Certific	cate or Rating A	pplied Fo	r on Basis	s of:					100							
□ A.	Completion of Required Test	1. Aircraft	to be used (i	f flight test re	quired)			2a. Total tin	ne in this aircr	raft / SIM / FTD	hour		2b. Pilot in	command	hours	
<u>В</u> .	Military	1. Service						2. Date Rate	ed		nours	,	3. Rank or (Grade and Se	rvice Numb	er
	Obtained In	4a. Flown 1	0 hours PIC	in last 12 mo	nths in the f	ollowing Mil	itary Aircraft.			4b. US Militar	ry PIC & Instru	ument check	in last 12 mo	onths (List Ai	rcraft)	
C.	Graduate of Approved	1. Name and	d Location o	of Training Ag	ency or Trai	ining Center							1a. Certifica	ation Number	r	
	Course	2. Curriculu	Im From Wh	ich Graduate	d								3. Date			
D.	Holder of Foreign License	1. Country					2. Grade of	License				3. Number				
	Issued By	4. Ratings														
E.	Completion of Air Carrier's Approved	1. Name of	Air Carrier						2. Date 3. Which C			arriculum				
III RECO	RD OF PILOT TI	ME (Do no	ot write in	the shade	d areas.)									opqrade		
	Total	Instruction Received	Solo	Pilot in Command (PIC)	Cross Country Instruction Received	Cross Country Solo	Cross Country PIC	Instrument	Night Instruction Received	Night Take-off/ Landings	Night PIC	Night Take-Off/ Landing PIC	Number of Flights	Number of Aero-Tows	Number of Ground Launches	Number of Powered Launches
Airplanes				PIC SIC			PIC SIC				PIC SIC	PIC SIC				
Rotor-				PIC			PIC				PIC	PIC				
craft				SIC			SIC	1			SIC	SIC				
Powered Lift				PIC			PIC				PIC	PIC				
Gliders																
Lighter Than Air																
Simulator																
Device		<u> </u>	-					<u> </u>	-							
IV. Have v	ou failed a test for	this certifi	cate or rati	na?			Yes		No							
V. Applic and I agr	ants's Certificat	to be con	rtify that a sidered a	all stateme s part of th	nts and a e basis fo	nswers pr or issuanc	ovided by e of any F	me on thi AA certific	s application	on form are I have also	complete a	and true to understand	the best the Priva	of my kno acy Act sta	wledge atement	
that acco Signature	ompanies this fo of Applicant	rm.									Date					

FAA Form 8710-1 (4-00) Supersedes Previous Edition

NSN: 0052-00-682-5007

		Instru nave personally instructed the	ctor's	s Recommendation	to take the t	lest.			
Date	Instructor's Signatur	e (Print Name & Sign)		Certificate No:				Certificate E	Expires
	I	Air Ag	ency	's Recommendation					
The applicant has succes without further	ssfully completed our	test.		course, and i	is recommen	ded for cer	tification o	r rating	
Date	Agency Name and N	umber			Officials Sig	nature			
					Title				
Student Pilot Certif	Desig iticate Issued (Copy attached) eviewed this applicant's pilot I or the certificate or rating sou eviewed this applicant's gradu ssted and/or verified this appli Approved Tempora Disapproved Disap	nated Examiner or a logbook and/or training recor- ight. lation certificate, and found it icant in accordance with perti- ary Certificate Issued (Origina proval Notice Issued (Origina	Airm d, and d to be a inent pi I Attacl d Attac	an Certification Repression certify that the Individual meets the appropriate and in order, and have a rocedures and standards with the re- hed) hed)	entative e pertinent re returned the esult indicate	Report quirements certificate. ed below.	i		
Location of Test (Facility	, City, State)	, , , , , , , , , , , , , , , , , , , ,			Grou	und	Duratio	n of Test	Flight
Cartificate en Detine fan h	*/Link Tooto J			Trues(a) of Aircreft Hand		Devietnetie	n Ma (a)		- ingit
Certificate of Rating for v	which rested			Type(s) of Ancian Osed		Registratio	II NO.(S)		
Date	Examiner's Signature	(Print Name & Sign)		Certificate No.		Designatio	n No.		Designation Expires
Oral Approved Simulator/Train Aircraft Flight Check	ning Device Check	Inspector Examiner		Signature and Certificat	e Number				Date
I have personally tested to necessary requirements	this applicant in accordance w with the result indicated below Approved Temporary Certi	Aviation Safety with or have otherwise verified w. ficate Issued (Original Attach	/ Ins I that th ed)	pector or Technician Re nis applicant complies with pertiner Disapproved Disappro	eport nt procedure: aval Notice Is	s, standard sued (Origi	s, policies	, and or ed)	
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Stage 1 / **Module 11 Quiz** Regulations

- **1.** The definition of nighttime is
 - A-sunset to sunrise.
 - B—one hour after sunset to one hour before sunrise.
 - C—the time between the end of evening civil twilight and the beginning of morning civil twilight.
- **2.** A Third-Class Medical Certificate is issued to a 36-year-old pilot on August 10, this year. To exercise the privileges of a Private Pilot Certificate, the medical certificate will be valid until midnight on
 - A—August 10, 2 years later.
 - B—August 31, 3 years later.
 - C—August 31, 2 years later.
- **3.** Under what conditions may objects be dropped from an aircraft?
 - A—Only in an emergency.
 - B—If precautions are taken to avoid injury or damage to persons or property on the surface.
 - C—If prior permission is received from the Federal Aviation Administration.
- **4.** Where may an aircraft's operating limitations be found?
 - A—On the airworthiness certificate.
 - B—In the current FAA approved flight manual, approved manual material, markings and placards, or combination thereof.
 - C—In the aircraft engine and airframe logbooks.
- **5.** Which preflight action is specifically required of the pilot prior to each flight?
 - A—Check the aircraft logbooks for appropriate entries.
 - B—Become familiar with all available information concerning the flight.
 - C—Review wake turbulence procedures.
- **6.** With certain exceptions, safety belts are required to be secured about passengers during
 - A-taxi, takeoff and landings.
 - B—all flight conditions.
 - C—flight in turbulent air.

Name:

Grade: ____

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Instructor: _
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7. What exception, if any, permits a private pilot to act as pilot in command of an aircraft carrying passengers who pay for the flight?

Date:

- A—If the passengers pay all the operating expenses.
- B—If a donation is made to a charitable organization for the flight.
- C—There is no exception.
- **8.** No person may begin a flight in a rotorcraft under VFR unless there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly thereafter for at least
 - A—20 minutes.
 - B—30 minutes.
 - C-1 hour.
- **9.** During operations within controlled airspace at altitudes of less than 1,200 feet AGL, the minimum horizontal distance from clouds requirement for VFR flight is
 - A—1,000 feet. B—2,000 feet. C—1,500 feet.
- **10.** What ATC facility should the pilot contact to receive a special VFR departure clearance in Class D airspace?
 - A—Automated Flight Service Station.
 - B—Air Traffic Control Tower.
 - C—Air Route Traffic Control Center.

Stage 1 Exam Pre-Solo Written

Choose the most correct answer choice.

- **1.** How many hours are required for completion of the Private Pilot Certificate, following a Part 141 program?
 - A—35 hours of flight training, 35 hours of ground training.
 - B—40 hours of flight training, 35 hours of ground training.
 - C—73 hours of flight training, 40 hours of ground training.
- **2.** Safety belts are required to be properly secured about which persons in an aircraft and when?
 - A—Pilots only, during takeoffs and landings.
 - B—Passengers, during taxi, takeoffs, and landings only.
 - C—Each person on board the aircraft during the entire flight.
- **3.** The angle between the chord line of an airfoil and the relative wind is known as the angle of _____
 - A—lift.
 - B—attack.
 - C-incidence.
- **4.** What is ground effect?
 - A—The result of interference of the Earth with airflow patterns around the helicopter.
 - B—The result of alteration of airflow patterns increasing induced drag around the rotor blades.
 - C—The result of disruption of airflow patterns about the blades of a rotor to the point where the rotor no longer supports the weight of the helicopter in flight.
- **5.** The wind condition that requires maximum caution when avoiding wake turbulence on landing is a ______
 - A—light, quartering headwind.
 - B—light, quartering tailwind.
 - C—strong headwind.

Name:	
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Grade: _____ Date: _____

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Instructor: ____
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- 6. The altitude deviation allowed by the PTS for operations in the pattern is _____
 - A—100 ft. B—150 ft.
 - C—200 ft.
- **7.** Which is appropriate for a helicopter approaching an airport for landing?
 - A—Remain below the airplane traffic pattern.
 - B—Avoid the flow of fixed wing traffic.
 - C—Fly right hand traffic.
- **8.** Which is the correct traffic pattern departure procedure to use at a noncontrolled airport?
 - A—Depart in any direction consistent with safety after crossing the airport boundary.
 - B—Make all turns to the left.
 - C—Comply with the FAA traffic pattern procedures for the airport.
- **9.** When the speed of a helicopter increases from 20 knots to 60 knots, parasite drag increases by a factor of _____
 - A—three.
 - B—six.
 - C-nine.
- **10.** The most effective method of scanning for other aircraft for collision avoidance during daylight hours is to use
 - A—regularly spaced concentration on the 3-, 9-, and 12-o'clock positions.
 - B—a series of short, regularly spaced eye movements to search each 10-degree sector.
 - C—peripheral vision by scanning small sectors and utilizing off-center viewing.

- **11.** What are the six primary instruments involved in the instrument scan?
 - A—Airspeed indicator, heading indicator, altimeter, VOR, vertical speed indicator, attitude indicator.
 - B—Heading indicator, tachometer, VOR, airspeed indicator, altimeter, turn coordinator.
 - C—Heading indicator, altimeter, vertical speed indicator, turn coordinator, attitude indicator, airspeed indicator.
- **12.** As VFR pilots, it is most crucial for the pilot-incommand to perform the instrument scan,
 - A—equally dividing his/her time between the 6 primary instruments and the engine instruments.
 - B—while maintaining collision avoidance by dividing his/her time between inside and outside the cockpit.
 - C—keeping his/her head inside the cockpit at all times.
- **13.** Current charts must be used at all times. Sectional charts are revised

A—every 56 days.

- B—no more than once a year.
- C—every 6 months.
- **14.** Information concerning parachute jumping sites may be found in the_____

A—NOTAMs.

- B—Airport/Facility directory.
- C—graphic notices and supplementary data.
- **15.** Most midair collision accidents occur during
 - A—hazy days. B—clear days. C—cloudy nights.
- **16.** Students must uphold at all times

A—FAA regulations.

B—school requirements and procedures.

C—both A and B.

- **17.** The four forces acting on a helicopter in flight are
 - A—lift, weight, thrust, and drag.
 - B—lift, weight, gravity, and thrust.
 - C—lift, gravity, power, and friction.
- **18.** Who is responsible for making the go/no-go decision for each flight?
 - A—Pilot-in-command.
 - B—Certified flight instructor.
 - C—Chief flight instructor.
- **19.** When you fly solo, you are pilot-in-command, and you are required to have in your personal possession a
 - A—pilot certificate and logbook.
 - B—pilot certificate, photo ID, and medical certificate.
 - C—CFI solo endorsement, and copy of the FAR/ AIM.
- **20.** During forward cruising flight at constant airspeed and altitude, the individual rotor blades, when compared to each other, are operating
 - A—with increasing lift on the retreating blade.
 - B—with decreasing angle of attack on the advancing blade.
 - C—at unequal airspeed, unequal angles of attack and equal lift moment.
- **21.** Name the four strokes of a piston engine:
 - A—Intake, induction, power, expansion.
 - B—Intake, compression, power, exhaust.
 - C—Intake, compression, power, expansion.
- **22.** Which condition is most favorable to the development of carburetor icing?
 - A—Any temperature below freezing and a relative humidity of less than 50%.
 - B—Between 32°F and 50°F and low humidity.
 - C—Between 20°F and 70°F and high humidity.
- 23. Clouds, fog, or dew will always form when
 - A—water vapor condenses.
 - B—water vapor is present.
 - C—relative humidity reaches 100%.

- **24.** What instrument(s) will be affected if the pitot tube becomes clogged, but the static vents remain clear?
 - A—Airspeed indicator.
 - B—Vertical speed indicator.
 - C—Both A and B.
- **25.** In steady straight-and-level flight
 - A—lift is greater than drag and thrust equals weight.
 - B-weight equals lift and drag equals thrust.
 - C—lift equals weight and thrust is greater than drag.
- **26.** The lift differential that exists between the advancing main rotor blade and the retreating main rotor blade is known as
 - A-transverse flow effect.
 - B-dissymmetry of lift.
 - C—hunting tendency.
- **27.** Who is responsible for determining if an aircraft is in condition for safe flight?
 - A—A certificated aircraft mechanic.
 - B—The pilot-in-command.
 - C—The owner or operator.
- **28.** If the outside air temperature (OAT) at a given altitude is warmer than standard, the density altitude is
 - A—equal to pressure altitude.
 - B—lower than pressure altitude.
 - C—higher than pressure altitude.
- **29.** Which combination of atmospheric conditions will reduce aircraft takeoff and climb performance?
 - A—Low temperature, low relative humidity, and low density altitude.
 - B—High temperature, low relative humidity, and low density altitude.
 - C—High temperature, high relative humidity, and high density altitude.

- **30.** If the temperature/dew point spread is small and decreasing, and the temperature is 62°F, what type of weather is most likely to develop?
 - A—Freezing precipitation.
 - B—Thunderstorms.
 - C—Fog or low clouds.
- **31.** What conditions are necessary for the formation of thunderstorms?
 - A—High humidity, lifting force, and unstable conditions.
 - B—High humidity, high temperature, and cumulus clouds.
 - C—Lifting force, moist air, and extensive cloud cover.
- **32.** Two-way radio communication must be established with the Air Traffic Control facility having jurisdiction over the area prior to entering which class airspace?
 - A—Class C.
 - B—Class E.
 - C—Class G.
- **33.** An airport's rotating beacon operated during daylight hours indicates
 - A—that weather at the airport located in Class D airspace is below basic VFR weather minimums.
 - B—there are obstructions on the airport.
 - C—the Air Traffic Control tower is not in operation.
- **34.** The numbers 9 and 27 on a runway indicate that the runway is oriented approximately
 - A— 009° and 027° true.
 - $B{--}090^\circ$ and 270° true.
 - C—090° and 270° magnetic.

- **35.** If two-way communication fails at an airport with a tower and cannot be restored, the recommended procedure is to
 - A—make an off-airport landing.
 - B—turn on your landing light, enter the airport area on final approach, and land as soon as possible.
 - C—observe traffic flow, enter the traffic pattern on the downwind, look for light signals from the tower, and squawk 7600 on your transponder.
- **36.** In an in-flight emergency requiring emergency action, the pilot-in-command
 - A—may deviate from any rule of 14 CFR Part 91 to the extent required to meet that emergency.
 - B—must not deviate from any rule of 14 CFR Part 91.
 - C—may deviate from any rule of 14 CFR Part 91 but only after receiving prior permission from ATC.
- **37.** Student pilots are responsible for all information, rules, and regulations in Parts
 - A—61, and 91. B—91, and 121.
 - C—1, and 67.

- **38.** A person may not act as a crewmember of a civil aircraft if alcoholic beverages have been consumed by that person within the preceding
 - A—8 hours.
 - B-12 hours.
 - C-24 hours.
- **39.** List the grade and capacity of the fuel and oil to be used in the training aircraft used for solo flight:

	Grade	Capacity
Fuel		
Oil		

40. What do each of the following ATC light signals mean?

	in flight	on the ground
Steady green Flashing green		
Flashing red Flashing white		
Alternating red and green		

Stage 2 Exam Advanced Maneuvers

- The purpose of the lead-lag (drag) hinge in a three-bladed, fully articulated helicopter rotor system is to compensate for
 - A-Coriolis effect.
 - B—coning.
 - C—geometric unbalance.
- **2.** High airspeeds, particularly in turbulent air, should be avoided primarily because of the possibility of

A—an abrupt pitch up. B—retreating blade stall.

- C—a low frequency vibration developing.
- **3.** The maximum forward speed of a helicopter is limited by
 - A—retreating blade stall.
 - B—rotor RPM red line.
 - C—solidity ration.
- **4.** Ground resonance is most likely to develop when
 - A—on the ground and harmonic vibrations develop between the main and tail rotors.
 - B—a series of shocks causes the rotor system to become unbalanced.
 - C—there is a combination of a decrease in the angle of attack on the advancing blade and an increase in the angle of attack on the retreating blade.
- **5.** If the pilot experiences ground resonance, and the rotor RPM is not sufficient for flight,
 - A—open the throttle full and liftoff.
 - B—apply the rotor brake and stop the rotor as soon as possible.
 - C—attempt to takeoff at that power setting.
- **6.** If the pilot were to make a near-vertical power approach into a confined area with the airspeed near zero, what hazardous condition may develop?
 - A—Ground resonance when ground contact is made.
 - B—A settling-with-power condition.
 - C—Blade stall vibration could develop.

Name: ___

Grade: ____

- Instructor: _
 - **7.** If anti-torque failure occurred during the landing touchdown, what could be done to help straighten out a left yaw prior to touchdown?

Date:

- A—A flare to zero airspeed and vertical descent to touchdown should be made.
- B—Apply available throttle to help swing the nose to the right just prior to touchdown.
- C—A normal running landing should be made.
- **8.** The upward bending of the rotor blades resulting from the combined forces of lift and centrifugal force is known as:
 - A-coning.
 - B-blade slapping.
 - C—inertia.
- **9.** Which is a precaution to be observed during an autorotative descent?
 - A—Normally, the airspeed is controlled with the collective pitch.
 - B—Normally, only the cyclic control is used to make turns.
 - C—Do not allow the rate of descent to get too low at zero airspeed.
- **10.** What is the procedure for a slope landing?
 - A—When the downslope skid is on the ground, hold the collective pitch at the same position.
 - B—Minimum rpm shall be held until the full weight of the helicopter is on the skid.
 - C—When parallel to the slope, slowly lower the upslope skid to the ground prior to lowering the downslope skid.
 - **11.** Which action would be appropriate for confined area operations?
 - A—Takeoff and landings must be made into the wind.
 - B—Plan the flightpath over areas suitable for a forced landing.
 - C—a very steep angle of descent should be used to land on the selected spot.

- **12.** The principal reason the shaded area of a Height vs. Velocity Chart should be avoided is
 - A—turbulence near the surface can dephase the blade dampers.
 - B—rotor rpm may decay before ground contact is made if an engine failure should occur.
 - C—insufficient airspeed would be available to ensure a safe landing in case of an engine failure.
- **13.** Takeoff from a slope is normally accomplished by
 - A—moving the cyclic in a direction away from the slope.
 - B—bringing the helicopter to a level attitude before completely leaving the ground.
 - C—moving the cyclic stick to a full up position as the helicopter nears a level attitude.
- **14.** Which is a correct general rule for pinnacle and ridgeline operations?
 - A—Gaining altitude on takeoff is more important than gaining airspeed.
 - B—The approach path to a ridgeline is usually perpendicular to the ridge.
 - C—A climb to a pinnacle or ridgeline should be performed on the upwind side.
- **15.** Before beginning a confined area or pinnacle landing, the pilot should first
 - A—execute a high reconnaissance.
 - B—execute a low reconnaissance.
 - C—fly around the area to discover areas of turbulence.
- **16.** Under what condition should a helicopter pilot consider using a running takeoff?
 - A—When gross weight or density altitude prevents a sustained hover at normal hovering altitude.
 - B—When normal climb speed is assured between 10 and 20 feet.
 - C—When the additional airspeed can be quickly converted to altitude.
- **17.** If possible, when departing a confined area, what type of takeoff is preferred?
 - A—A normal takeoff from a hover.
 - B—A vertical takeoff.
 - C—A normal takeoff from the surface.

- **18.** The proper action to initiate a quick stop is to apply
 - A—forward cyclic and lower the collective pitch.
 - B—aft cyclic and raise the collective pitch.
 - C—aft cyclic and lower the collective pitch.
- **19.** Which flight technique is recommended for use during hot weather?
 - A—Use minimum allowable rpm and maximum allowable manifold pressure during all phases of flight.
 - B—During hovering flight, maintain minimum engine rpm during left pedals turns and maximum engine rpm during right pedal turns.
 - C—During takeoff accelerate slowly into forward flight.
- **20.** What action should the pilot take if engine failure occurs at altitude?
 - A—Open the throttle as the collective pitch is raised.
 - B—Reduce cyclic back stick pressure during turns.
 - C—Lower the collective pitch control as necessary, to maintain rotor rpm.

Stage 3 Exam Cross-Country Flight

Choose the most correct answer choice.

- The planned course is 165°, and the forecast wind is 330° at 15 knots. If the expected TAS is 145 knots, what is the required heading and groundspeed?
 - A— 173° and 143 knots.
 - B—167° and 159 knots.
 - C—154° and 165 knots.
- **2.** If you burn 7 gallons in 35 minutes, what is your rate of fuel consumption, and how long would it take to burn 10 gallons?
 - A-11.2 gallons/hour, and 68 minutes.
 - B—12.5 gallons/hour, and 38 minutes.
 - C—12 gallons/hour, and 50 minutes.
- **3.** Which items are included in the empty weight of an aircraft?
 - A—Unusable fuel and undrainable oil.
 - B—Only the airframe, powerplant, and optional equipment.
 - C—Full fuel tanks and engine oil to capacity.

4. GIVEN:

	Weight (lb)	Arm (in)	Moment (lb-in)
Empty weight	1,495.0	101.4	151,593.0
Pilot & Pax	380.0	64.0	
Fuel (30 gal)		96.0	

The CG is located how far aft of datum?

A—CG 92.44. B—CG 94.01. C—CG 119.8.

- **5.** Which combination of atmospheric conditions will reduce aircraft takeoff and climb performance?
 - A—Low temperature, low relative humidity, and low density altitude.
 - B—High temperature, low relative humidity, and low density altitude.
 - C—High temperature, high relative humidity, and high density altitude.

Name: ___

Grade: ____

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Instructor: _
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- **6.** When converting from true course to magnetic heading, a pilot should
 - A—subtract easterly variation and right wind correction angle.
 - B—add westerly variation and subtract left wind correction angle.

Date:

- C—subtract westerly variation and add right wind correction angle.
- **7.** How many Global Positioning System (GPS) satellites are required to yield a three dimensional position (latitude, longitude, and altitude) and time solution?
 - A = 5B = 6C = 4
- **8.** What is the time en route for the following flight?

Distance 65 miles, true course 060° T, wind 270° T at 12 knots, TAS 110 knots. Add 2 minutes for climb-out.

- A—34 minutes. B—28 minutes.
- C—40 minutes.
- **9.** (Refer to Exam Figure 1.) What is the approximate position of the aircraft if the VOR receivers indicate the 245° radial of Sulphur Springs VOR-DME (area 5) and the 140° radial of Bonham VORTAC (area 3)?

A—Meadowview airport.

B—Glenmar airport.

C—Majors airport.

- **10.** (Refer to Exam Figure 1.) On what course should the VOR receiver (OBS) be set in order to navigate direct from Majors Airport (area 1) to Quitman VORTAC (area 2)?
 - A—101 B—208 C—281



Exam Figure 1. Sectional chart excerpt.

- **11.** Which VFR cruising altitude is acceptable for a flight on a Victor Airway with a magnetic course of 175°? The terrain is lower than 1,000 feet.
 - A—4,500 feet. B—5,000 feet. C—5,500 feet.
- **12.** Cloud bases in Terminal Aerodrome Forecasts are given
 - A—MSL. B—AGL. C—ASL.
- **13.** You are flying MH 080, with the OBS selected to 080, CDI needle showing 2 dots right, and the FROM flag showing. Desired course is the 080 radial outbound. The desired course is
 - A—out to your left.
 - B—out to your right.
 - C—directly behind you.

- **14.** (Refer to Exam Figure 2, illustration 1.) The VOR receiver has the indications shown. What is the aircraft's position relative to the station?
 - A—North B—East C—South
- **15.** If Air Traffic Control advises that radar service is terminated when the pilot is departing Class C airspace, the transponder should be set to code
 - A—0000. B—1200. C—4096.
- **16.** If you are 3 NM off-course to the right in 20 NM, what is your tracking error?
 - A—9° left. B—9° right. C—12° right.

- **17.** An ATC radar facility issues the following advisory to a pilot flying on a heading of 090°: "Traffic 3 o'clock, 2 miles, Westbound." Where should the pilot look for this traffic?
 - A—East
 - B—South
 - C—West
- **18.** In addition to other preflight action for a VFR cross-country flight, regulations specifically require the pilot-in-command to
 - A—determine runway length at the airports of intended use.
 - B—check each fuel tank visually to ensure that it is always filled to capacity.
 - C—file a flight plan for the proposed flight.

- **19.** (Refer to Exam Figure 2, illustration 8.) The VOR receiver has the indications shown. What radial is the aircraft crossing?
 - A—030 B—210
 - C = 300
- **20.** What procedure is recommended when climbing or descending VFR on an airway?
 - A—Execute gentle banks left and right for continuous visual scanning of the airspace.
 - B—Advise the nearest FCC of the altitude changes.
 - C—Fly away from the centerline of the airway before changing altitude.


Exam Figure 2. VOR.

Stage 4 Final Exam Prep for Checkride

Choose the most correct answer choice.

- **1.** What type of fuel can be substituted in an aircraft if the recommended octane is not available?
 - A—The next higher octane aviation gas.
 - B—The next lower octane aviation gas.
 - C—Unleaded automotive gas of the same octane rating.
- **2.** If recency of experience requirements for night flight are not met and official sunset is 1830, the latest time passengers may be carried is
 - A—1829. B—1859.
 - C = 1929
- **3.** The wind at 5,000 feet AGL is southwesterly while the surface wind is southerly. This difference in direction is primarily due to

A—stronger pressure gradient at higher altitudes. B—friction between the wind and the surface. C—stronger Coriolis force at the surface.

- **4.** Except when necessary for takeoff or landing, what is the minimum safe altitude for a pilot to operate an aircraft anywhere?
 - A—An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.
 - B—An altitude of 500 feet above the surface and no closer than 500 feet to any person, vessel, vehicle or structure.
 - C—An altitude of 500 feet above the highest obstacle within a horizontal radius of 1,000 feet.

Name:	
Grade:	Date:
Instructor:	

5. During a night flight, you observe steady red and green lights ahead and at the same altitude. What is the general direction of movement of the other aircraft?

A—The other aircraft is crossing to the left. B—The other aircraft is flying away from you. C—The other aircraft is approaching head on.

- 6. When changing from autorotation for maximum endurance to one for maximum range, the airspeed must be ______ and the rate of descent will ______.
 - A—increase, decrease.
 - B-decrease, increase.
 - C-increase, increase.
- **7.** One weather phenomenon which will always occur when flying across a front is a change in the
 - A—wind direction.
 - B—type of precipitation.
 - C—stability of the air mass.
- **8.** What are characteristics of a moist, unstable air mass?
 - A—Cumuliform clouds and showery precipitation.
 - B—Poor visibility and smooth air.
 - C—Stratiform clouds and showery precipitation.

METAR KINK 12845Z 11012G18KT 15SM SKC 25/17 A3000 METAR KBOI 121854Z 13004KT 30SM SCT150 17/6 A3015 METAR KLAX 121852Z 25004KT 6SM BR SCT007 SCT250 16/15 A2991 SPECI KMDW 121856Z 32005KT 1 1/2SM RA OVC007 17/16 A2980 RMK RAB35 SPECI KJFK 121853Z 18004KT 1/2SM FG R04/2200 OVC005 20/18 A3006

Exam Figure 3.

- **9.** (Refer to Exam Figure 3.) What are the current conditions depicted for Chicago Midway Airport (KMDW)?
 - A—Sky 700 feet overcast, visibility 1-1/2 SM, rain.
 - B—Sky 7000 feet overcast, visibility 1-1/2 SM, heavy rain.
 - C—Sky 700 feet overcast, visibility 11, occasionally 2 SM, with rain.
- **10.** From which primary source should information be obtained regarding expected weather at the estimated time of arrival if your destination has no Terminal Aerodrome Forecast?

A—Low-level Prognostic Chart.

B—Weather Depiction Chart.

- C—Aviation Area Forecast.
- **11.** Offset flapping hinges _____ assist in keeping the fuselage parallel with the rotor disc and they allow a _____ range of center of gravity position.

A—do/narrower B—do not/wider

- B—do not/wide
- C-do/wider
- **12.** A 10-knot wind at 45° to the runway direction will cause a crosswind component of
 - A—7 knots.
 - B-10 knots.
 - C—4 knots.
- **13.** According to the Private Rotorcraft Practical Test Standards, during a straight in autorotation a student is required to come to a hover within feet of a designated point.
 - A-200 B-100 C-300
- **14.** According to the Private Rotorcraft Practical Test Standards, a student must maintain what accuracy standards during navigation tasks
 - A—+/- 100 feet altitude, +/- 10 degrees heading. B—+/- 200 feet altitue, +/- 10 degrees heading. C—+/- 200 feet altitude, +/- 15 degrees heading.
- **15.** Which light signal from the control tower clears a pilot to taxi?
 - A—Flashing green.
 - B—Steady green.
 - C—Flashing white.

- **16.** How should contact be established with an En Route Flight Advisory Service (EFAS) station, and what service would be expected?
 - A—Call EFAS on 122.2 for routine weather, current reports on hazardous weather, and altimeter settings.
 - B—Call EFAS on 122.5 for advisory service pertaining to severe weather.
 - C—Call EFAS on 122.0 for information regarding actual weather and thunderstorm activity along proposed route.
- **17.** If you have to land on a high level landing site surrounded by irregular features you should aim to complete the approach

A—short of the site.

- B—over the site.
- C—on the site.
- **18.** If there is an inversion above your planned cold mountain landing site, you should anticipate that translational lift will ______ as you descend through the inversion.
 - A—increase
 - B-decrease
 - C—remain the same
- **19.** Generally ice accretion is _____ on sharp objects.
 - A—faster
 - B—slower
 - C—the same
- **20.** A major risk of rotor blade icing is the resulting unbalancing of blades which can cause ______ on landing.
 - A-recirculation
 - B—ground resonance
 - C—asymmetric loading

Principles of Helicopter Flight



Syllabus

This syllabus provides a comprehensive and integrated flight and ground school training program. Based on the textbook *Principles of Helicopter Flight* by Walter J. Wagtendonk, instructors and students can use this curriculum to complete the Private Pilot certificate course with a Helicopter rating. Effective for both Part 141 and Part 61 programs, the syllabus will ensure all experience and knowledge requirements have been met.

Flight lessons are presented side-by-side with their corresponding ground lessons. Optional Reviews are included in each stage, allowing students to review material when necessary yet still follow the syllabus to maintain progress.

Instructor endorsements, stage exams (including a Pre-Solo written), airman certificate rating application (Form 8710), and a checkride checklist are included. This syllabus will take the student from start to finish in an efficient and logical manner, with the ultimate goal of achieving Private Pilot Helicopter certification.



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