

of this section, appropriate to the ground instructor rating for which the course applies:

(1) 20 hours of training if the course is for an initial issuance of a ground instructor certificate; or

(2) 10 hours of training if the course is for an additional ground instructor rating.

(b) Ground training must include the following aeronautical knowledge areas:

- (1) Learning process;
- (2) Elements of effective teaching;
- (3) Student evaluation and testing;
- (4) Course development;
- (5) Lesson planning; and
- (6) Classroom training techniques.

(c) Ground training for a basic ground instructor certificate must include the aeronautical knowledge areas applicable to a recreational and private pilot.

(d) Ground training for an advanced ground instructor rating must include the aeronautical knowledge areas applicable to a recreational, private, commercial, and airline transport pilot.

(e) Ground training for an instrument ground instructor rating must include the aeronautical knowledge areas applicable to an instrument rating.

(f) A student who satisfactorily completed 2 years of study on the principles of education at a college or university may be credited with 10 hours of the training required in paragraph (a)(1) of this section.

3. *Stage checks and end-of-course tests.* Each student enrolled in a ground instructor course must satisfactorily accomplish the stage checks and end-of-course tests, in accordance with the school's approved training course, consisting of the approved knowledge areas in paragraph (b), (c), (d), and (e) of section No. 2 of this appendix appropriate to the ground instructor rating for which the course applies.

APPENDIX I TO PART 141—ADDITIONAL AIRCRAFT CATEGORY AND/OR CLASS RATING COURSE

1. *Applicability.* This appendix prescribes the minimum curriculum for an additional aircraft category rating course or an additional aircraft class rating course required under this part, for the following ratings:

- (a) Airplane single-engine.
- (b) Airplane multiengine.
- (c) Rotorcraft helicopter.
- (d) Rotorcraft gyroplane.
- (e) Powered-lift.
- (f) Glider.
- (g) Lighter-than-air airship.
- (h) Lighter-than-air balloon.

2. *Eligibility for enrollment.* A person must hold the level of pilot certificate for the additional aircraft category and class rating for which the course applies prior to enrolling in the flight portion of an additional air-

craft category or additional aircraft class rating course.

3. *Aeronautical knowledge training.*

(a) For a recreational pilot certificate, the following aeronautical knowledge areas must be included in a 10-hour ground training course for an additional aircraft category and/or class rating:

(1) Applicable regulations issued by the Federal Aviation Administration for recreational pilot privileges, limitations, and flight operations;

(2) Safe and efficient operation of aircraft, including collision avoidance, and recognition and avoidance of wake turbulence;

(3) Effects of density altitude on takeoff and climb performance;

(4) Weight and balance computations;

(5) Principles of aerodynamics, powerplants, and aircraft systems;

(6) Stall awareness, spin entry, spins, and spin recovery techniques if applying for an airplane single engine rating; and

(7) Preflight action that includes how to obtain information on runway lengths at airports of intended use, data on takeoff and landing distances, weather reports and forecasts, and fuel requirements.

(b) For a private pilot certificate, the following aeronautical knowledge areas must be included in a 10-hour ground training course for an additional class rating or a 15-hour ground training course for an additional aircraft category and class rating:

(1) Applicable regulations issued by the Federal Aviation Administration for private pilot privileges, limitations, and flight operations;

(2) Safe and efficient operation of aircraft, including collision avoidance, and recognition and avoidance of wake turbulence;

(3) Effects of density altitude on takeoff and climb performance;

(4) Weight and balance computations;

(5) Principles of aerodynamics, powerplants, and aircraft systems;

(6) Stall awareness, spin entry, spins, and spin recovery techniques if applying for an airplane single engine rating; and

(7) Preflight action that includes how to obtain information on runway lengths at airports of intended use, data on takeoff and landing distances, weather reports and forecasts, and fuel requirements.

(c) For a commercial pilot certificate, the following aeronautical knowledge areas must be included in a 15-hour ground training course for an additional class rating or a 20-hour ground training course for an additional aircraft category and class rating:

(1) Applicable regulations issued by the Federal Aviation Administration for commercial pilot privileges, limitations, and flight operations;

(2) Basic aerodynamics and the principles of flight;

(3) Safe and efficient operation of aircraft;

- (4) Weight and balance computations;
 - (5) Use of performance charts;
 - (6) Significance and effects of exceeding aircraft performance limitations;
 - (7) Principles and functions of aircraft systems;
 - (8) Maneuvers, procedures, and emergency operations appropriate to the aircraft;
 - (9) Nighttime and high-altitude operations; and
 - (10) Procedures for flight and ground training for lighter-than-air ratings.
- (d) For an airline transport pilot certificate, the following aeronautical knowledge areas must be included in a 25-hour ground training course for an additional aircraft category and/or class rating:
- (1) Applicable regulations issued by the Federal Aviation Administration for airline transport pilot privileges, limitations, and flight operations;
 - (2) Meteorology, including knowledge and effects of fronts, frontal characteristics, cloud formations, icing, and upper-air data;
 - (3) General system of weather and NOTAM collection, dissemination, interpretation, and use;
 - (4) Interpretation and use of weather charts, maps, forecasts, sequence reports, abbreviations, and symbols;
 - (5) National Weather Service functions as they pertain to operations in the National Airspace System;
 - (6) Windshear and microburst awareness, identification, and avoidance;
 - (7) Principles of air navigation under instrument meteorological conditions in the National Airspace System;
 - (8) Air traffic control procedures and pilot responsibilities as they relate to en route operations, terminal area and radar operations, and instrument departure and approach procedures;
 - (9) Aircraft loading; weight and balance; use of charts, graphs, tables, formulas, and computations; and the effects on aircraft performance;
 - (10) Aerodynamics relating to an aircraft's flight characteristics and performance in normal and abnormal flight regimes;
 - (11) Human factors;
 - (12) Aeronautical decision making and judgment; and
 - (13) Crew resource management to include crew communication and coordination.

4. Flight training.

- (a) Course for an additional airplane category and single engine class rating.
 - (1) For the recreational pilot certificate, the course must include 15 hours of flight training on the areas of operations under part 141, appendix A, paragraph 4(c)(1) that include—
 - (i) Two hours of flight training to an airport and at an airport that is located more than 25 nautical miles from the airport where the applicant normally trains, with

three takeoffs and three landings, except as provided under §61.100 of this chapter; and

- (ii) Three hours of flight training in an aircraft with the airplane category and single engine class within 2 calendar months before the date of the practical test.

(2) For the private pilot certificate, the course must include 20 hours of flight training on the areas of operations under part 141, appendix B, paragraph 4(d)(1). A flight simulator and flight training device cannot be used to meet more than 4 hours of the training requirements, and the use of the flight training device is limited to 3 hours of the 4 hours permitted. The course must include—

- (i) Three hours of cross country training in a single engine airplane, except as provided under §61.111 of this chapter;

- (ii) Three hours of nighttime flight training in a single engine airplane that includes one cross country flight of more than 100 nautical miles total distance, and 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport;

- (iii) Three hours of flight training in a single engine airplane on the control and maneuvering of the airplane solely by reference to instruments, including straight and level flight, constant airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight; and

- (iv) Three hours of flight training in a single engine airplane within 2 calendar months before the date of the practical test.

(3) For the commercial pilot certificate, the course must include 55 hours of flight training on the areas of operations under part 141, appendix D, paragraph 4(d)(1). A flight simulator and flight training device cannot be used to meet more than 16.5 hours of the training requirements, and the use of the flight training device is limited to 11 hours of the 16.5 hours permitted. The course must include—

- (i) Five hours of instrument training in a single engine airplane that includes training using a view-limiting device on attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems;

- (ii) Ten hours of training in an airplane that has retractable landing gear, flaps, and a controllable pitch propeller, or is turbine-powered;

- (iii) One 2-hour cross country flight during daytime conditions in a single engine airplane, a total straight-line distance of more than 100 nautical miles from the original point of departure;

- (iv) One 2-hour cross country flight during nighttime conditions in a single engine airplane, a total straight-line distance of more

than 100 nautical miles from the original point of departure; and

(v) Three hours in a single engine airplane within 2 calendar months before the date of the practical test.

(4) For the airline transport pilot certificate, the course must include 25 hours flight training, including 15 hours of instrument training, in a single engine airplane on the areas of operation under part 141, appendix E, paragraph 4.(c). A flight simulator and flight training device cannot be used to meet more than 12.5 hours of the training requirements; and the use of the flight training device is limited to 6.25 hours of the 12.5 hours permitted.

(b) Course for an additional airplane category and multiengine class rating.

(1) For the private pilot certificate, the course requires 20 hours flight training on the areas of operations under part 141, appendix B, paragraph 4.(d)(2). A flight simulator and flight training device cannot be used more than 4 hours to meet the training requirements, and use of the flight training device is limited to 3 hours of the 4 hours permitted. The course must include—

(i) Three hours of cross country training in a multiengine airplane, except as provided under §61.111 of this chapter;

(ii) Three hours of nighttime flight training in a multiengine airplane that includes one cross country flight of more than 100 nautical miles total distance, and 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport;

(iii) Three hours of flight training in a multiengine airplane on the control and maneuvering of a multiengine airplane solely by reference to instruments, including straight and level flight, constant airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight; and

(iv) Three hours of flight training in a multiengine airplane in preparation for the practical test within 2 calendar months before the date of the test.

(2) For the commercial pilot certificate, the course requires 55 hours flight training on the areas of operations under part 141, appendix D, paragraph 4.(d)(2). A flight simulator and flight training device cannot be used more than 16.5 hours to meet the training requirements, and use of the flight training device is limited to 11 hours of the 16.5 hours permitted. The course must include—

(i) Five hours of instrument training in a multiengine airplane including training using a view-limiting device for attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems;

(ii) Ten hours of training in a multiengine airplane that has retractable landing gear, flaps, and a controllable pitch propeller, or is turbine-powered;

(iii) One 2-hour cross country flight during daytime conditions in a multiengine airplane, and a total straight-line distance of more than 100 nautical miles from the original point of departure;

(iv) One 2-hour cross country flight during nighttime conditions in a multiengine airplane, and a total straight-line distance of more than 100 nautical miles from the original point of departure; and

(v) Three hours in a multiengine airplane within 2 calendar months before the date of the practical test.

(3) For the airline transport pilot certificate, the course requires 25 hours of flight training in a multiengine airplane on the areas of operation under part 141, appendix E, paragraph 4.(c) that includes 15 hours of instrument training. A flight simulator and flight training device cannot be used more than 12.5 hours to meet the training requirements, and use of the flight training device is limited to 6.25 hours of the 12.5 hours permitted.

(c) Course for an additional rotorcraft category and helicopter class rating.

(1) For the recreational pilot certificate, the course requires 15 hours of flight training on the areas of operations under part 141, appendix A, paragraph 4.(c)(2) that includes—

(i) Two hours of flight training to and at an airport that is located more than 25 nautical miles from the airport where the applicant normally trains, with three takeoffs and three landings, except as provided under §61.100 of this chapter; and

(ii) Three hours of flight training in a rotorcraft category and a helicopter class aircraft within 2 calendar months before the date of the practical test.

(2) For the private pilot certificate, the course requires 20 hours flight training on the areas of operations under part 141, appendix B, paragraph 4.(d)(3). A flight simulator and flight training device cannot be used more than 4 hours to meet the training requirements, and use of the flight training device is limited to 3 hours of the 4 hours permitted. The course must include—

(i) Except as provided under §61.111 of this chapter, 3 hours of cross country flight training in a helicopter;

(ii) Three hours of nighttime flight training in a helicopter that includes one cross country flight of more than 50 nautical miles total distance, and 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport; and

(iii) Three hours of flight training in a helicopter within 2 calendar months before the date of the practical test.

(3) The commercial pilot certificate level requires 30 hours flight training on the areas of operations under appendix D of part 141, paragraph 4.(d)(3). A flight simulator and flight training device cannot be used more than 9 hours to meet the training requirements, and use of the flight training device is limited to 6 hours of the 9 hours permitted. The course must include—

(i) Five hours on the control and maneuvering of a helicopter solely by reference to instruments, and must include training using a view-limiting device for attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems. This aeronautical experience may be performed in an aircraft, flight simulator, flight training device, or an aviation training device;

(ii) One 2-hour cross country flight during daytime conditions in a helicopter, a total straight-line distance of more than 50 nautical miles from the original point of departure;

(iii) One 2-hour cross country flight during nighttime conditions in a helicopter, a total straight-line distance of more than 50 nautical miles from the original point of departure; and

(iv) Three hours in a helicopter within 2 calendar months before the date of the practical test.

(4) For the airline transport pilot certificate, the course requires 25 hours of flight training, including 15 hours of instrument training, in a helicopter on the areas of operation under part 141, appendix E, paragraph 4.(c). A flight simulator and flight training device cannot be used more than 12.5 hours to meet the training requirements, and use of the flight training device is limited to 6.25 hours of the 12.5 hours permitted.

(d) Course for an additional rotorcraft category and a gyroplane class rating.

(1) For the recreational pilot certificate, the course requires 15 hours flight training on the areas of operations under part 141, appendix A, paragraph 4.(c)(3) that includes—

(i) Two hours of flight training to and at an airport that is located more than 25 nautical miles from the airport where the applicant normally trains, with three takeoffs and three landings, except as provided under §61.100 of this chapter; and

(ii) Three hours of flight training in a gyroplane class within 2 calendar months before the date of the practical test.

(2) For the private pilot certificate, the course requires 20 hours flight training on the areas of operations under part 141, appendix B, paragraph 4.(d)(4). A flight simulator and flight training device cannot be used more than 4 hours to meet the training requirements, and use of the flight training device is limited to 3 hours of the 4 hours permitted. The course must include—

(i) Three hours of cross country flight training in a gyroplane, except as provided under §61.111 of this chapter;

(ii) Three hours of nighttime flight training in a gyroplane that includes one cross country flight of more than 50 nautical miles total distance, and 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport; and

(iii) Three hours of flight training in a gyroplane within 2 calendar months before the date of the practical test.

(3) For the commercial pilot certificate, the course requires 30 hours flight training on the areas of operations of appendix D to part 141, paragraph 4.(d)(4). A flight simulator and flight training device cannot be used more than 6 hours to meet the training requirements, and use of the flight training device is limited to 6 hours of the 9 hours permitted. The course must include—

(i) 2.5 hours on the control and maneuvering of a gyroplane solely by reference to instruments, and must include training using a view-limiting device for attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems. This aeronautical experience may be performed in an aircraft, flight simulator, flight training device, or an aviation training device.

(ii) One 2-hour cross country flight during daytime conditions in a gyroplane, a total straight-line distance of more than 50 nautical miles from the original point of departure;

(iii) Two hours of flight training during nighttime conditions in a gyroplane at an airport, that includes 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern); and

(iv) Three hours in a gyroplane within 2 calendar months before the date of the practical test.

(e) Course for an additional lighter-than-air category and airship class rating.

(1) For the private pilot certificate, the course requires 20 hours of flight training on the areas of operation under part 141, appendix B, paragraph 4.(d)(7). A flight simulator and flight training device cannot be used more than 4 hours to meet the training requirements, and use of the flight training device is limited to 3 hours of the 4 hours permitted. The course must include—

(i) Three hours of cross country flight training in an airship, except as provided under §61.111 of this chapter;

(ii) Three hours of nighttime flight training in an airship that includes one cross country flight of more than 25 nautical miles total distance and 5 takeoffs and 5 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport;

(iii) Three hours of flight training in an airship on the control and maneuvering of an airship solely by reference to instruments, including straight and level flight, constant airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight; and

(iv) Three hours of flight training in an airship within 2 calendar months before the date of the practical test.

(2) For the commercial pilot certificate, the course requires 55 hours of flight training on the areas of operation under part 141, appendix D, paragraph 4.(d)(7). A flight simulator and flight training device cannot be used more than 16.5 hours to meet the training requirements, and use of the flight training device is limited to 11 hours of the 16.5 hours permitted. The course must include—

(i) Three hours of instrument training in an airship that must include training using a view-limiting device for attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems;

(ii) One hour cross country flight during daytime conditions in an airship that consists of, a total straight-line distance of more than 25 nautical miles from the original point of departure;

(iii) One hour cross country flight during nighttime conditions in an airship that consists of a total straight-line distance of more than 25 nautical miles from the original point of departure; and

(iv) Three hours of flight training in an airship within 2 calendar months before the date of the practical test.

(f) Course for an additional lighter-than-air category and a gas balloon class rating.

(1) For the private pilot certificate, the course requires eight hours of flight training that includes 5 training flights on the areas of operations under part 141, appendix B, paragraph 4(d)(8). A flight simulator and flight training device cannot be used more than 1.6 hours to meet the training requirements, and use of the flight training device is limited to 1.2 hours of the 1.6 hours permitted. The course must include—

(i) Two flights of 1 hour each;

(ii) One flight involving a controlled ascent to 3,000 feet above the launch site; and

(iii) Two flights within 2 calendar months before the date of the practical test.

(2) For the commercial pilot certificate, the course requires 10 hours of flight training that includes eight training flights on the areas of operations under part 141, appendix D, paragraph 4(d)(8). A flight simulator and flight training device cannot be used more than 3 hours to meet the training requirements, and use of the flight training device is limited to 2 hours of the 3 hours permitted. The course must include—

(i) Two flights of 1 hour each;

(ii) One flight involving a controlled ascent to 5,000 feet above the launch site; and

(iii) Two flights within 2 calendar months before the date of the practical test.

(g) Course for an additional lighter-than-air category and a hot air balloon class rating.

(1) For the private pilot certificate, the course requires eight hours of flight training that includes 5 training flights on the areas of operations under part 141, appendix B, paragraph 4(d)(8). A flight simulator and flight training device cannot be used more than 1.6 hours to meet the training requirements, and use of the flight training device is limited to 1.2 hours of the 1.6 hours permitted. The course must include—

(i) Two flights of 30 minutes each;

(ii) One flight involving a controlled ascent to 2,000 feet above the launch site; and

(iii) Two flights within 2 calendar months before the date of the practical test.

(2) For the commercial pilot certificate, the course requires 10 hours of flight training that includes eight training flights on the areas of operation under part 141, appendix D, paragraph 4(d)(8). A flight simulator and flight training device cannot be used more than 3 hours to meet the training requirements, and use of the flight training device is limited to 2 hours of the 3 hours permitted. The course must include—

(i) Two flights of 30 minutes each;

(ii) One flight involving a controlled ascent to 3,000 feet above the launch site; and

(iii) Two flights within 2 calendar months before the date of the practical test.

(h) Course for an additional powered-lift category rating.

(1) For the private pilot certificate, the course requires 20 hours flight training on the areas of operations under part 141, appendix B, paragraph 4(d)(5). A flight simulator and flight training device cannot be used more than 4 hours to meet the training requirements, and use of the flight training device is limited to 3 hours of the 4 hours permitted. The course must include—

(i) Three hours of cross country flight training in a powered-lift except as provided under §61.111 of this chapter;

(ii) Three hours of nighttime flight training in a powered-lift that includes one cross-country flight of more than 100 nautical miles total distance, and 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport;

(iii) Three hours of flight training in a powered-lift on the control and maneuvering of a powered-lift solely by reference to instruments, including straight and level

flight, constant airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight;

(iv) Three hours of flight training in a powered-lift within 2 calendar months before the date of the practical test.

(2) For the commercial pilot certificate, the course requires 55 hours flight training on the areas of operations under part 141, appendix D, paragraph 4(d)(5). A flight simulator and flight training device cannot be used more than 16.5 hours to meet the training requirements, and use of the flight training device is limited to 11 hours of the 16.5 hours permitted. The course includes—

(i) Five hours of instrument training in a powered-lift that must include training using a view-limiting device for attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems;

(ii) One 2-hour cross country flight during daytime conditions in a powered-lift, a total straight-line distance of more than 100 nautical miles from the original point of departure;

(iii) One 2-hour cross country flight during nighttime conditions in a powered-lift, a total straight-line distance of more than 100 nautical miles from the original point of departure; and

(iv) Three hours of flight training in a powered-lift within 2 calendar months before the date of the practical test.

(3) For the airline transport pilot certificate, the course requires 25 hours flight training in a powered-lift on the areas of operation under part 141, appendix E, paragraph 4(c) that includes 15 hours of instrument training. A flight simulator and flight training device cannot be used more than 12.5 hours to meet the training requirements, and use of the flight training device is limited to 6.25 hours of the 12.5 hours permitted.

(i) Course for an additional glider category rating.

(1) For the private pilot certificate, the course requires 4 hours of flight training in a glider on the areas of operations under part 141, appendix B, paragraph 4(d)(6). A flight simulator and flight training device cannot be used more than 0.8 hours to meet the training requirements, and use of the flight training device is limited to 0.6 hours of the 0.8 hours permitted. The course must include—

(i) Five training flights in a glider with a certificated flight instructor on the launch/tow procedures approved for the course and on the appropriate approved areas of operation listed under appendix B, paragraph 4(d)(6) of this part; and

(ii) Three training flights in a glider with a certificated flight instructor within 2 cal-

endar months before the date of the practical test.

(2) The commercial pilot certificate level requires 4 hours of flight training in a glider on the areas of operation under part 141, appendix D, paragraph 4.(d)(6). A flight simulator and flight training device cannot be used more than 0.8 hours to meet the training requirements, and use of the flight training device is limited to 0.6 hours of the 0.8 hours permitted. The course must include—

(j) Course for an airplane additional single engine class rating.

(1) For the private pilot certificate, the course requires 3 hours of flight training in the areas of operations under part 141, appendix B, paragraph 4.(d)(1). A flight simulator and flight training device cannot be used more than 0.6 hours to meet the training requirements, and use of the flight training device is limited to 0.4 hours of the 0.6 hours permitted. The course must include—

(i) Three hours of cross country training in a single engine airplane, except as provided under §61.111 of this chapter;

(ii) Three hours of nighttime flight training in a single engine airplane that includes one cross country flight of more than 100 nautical miles total distance in a single engine airplane and 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport;

(iii) Three hours of flight training in a single engine airplane on the control and maneuvering of a single engine airplane solely by reference to instruments, including straight and level flight, constant airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight; and

(iv) Three hours of flight training in a single engine airplane within 2 calendar months before the date of the practical test.

(2) For the commercial pilot certificate, the course requires 10 hours of flight training on the areas of operations under part 141, appendix D, paragraph 4.(d)(1).

(i) Five hours of instrument training in a single engine airplane that must include training using a view-limiting device for attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems.

(ii) Ten hours of flight training in an airplane that has retractable landing gear, flaps, and a controllable pitch propeller, or is turbine-powered.

(iii) One 2-hour cross country flight during daytime conditions in a single engine airplane and a total straight-line distance of more than 100 nautical miles from the original point of departure;

(iv) One 2-hour cross country flight during nighttime conditions in a single engine airplane and a total straight-line distance of more than 100 nautical miles from the original point of departure; and

(v) Three hours of flight training in a single engine airplane within 2 calendar months before the date of the practical test.

(3) For the airline transport pilot certificate, the course requires 25 hours flight training in a single engine airplane on the areas of operation under appendix E to part 141, paragraph 4.(c), that includes 15 hours of instrument training. A flight simulator and flight training device cannot be used more than 12.5 hours to meet the training requirements, and use of the flight training device is limited to 6.25 hours of the 12.5 hours permitted.

(k) Course for an airplane additional multiengine class rating.

(1) For the private pilot certificate, the course requires 3 hours of flight training on the areas of operations of appendix B to part 141, paragraph 4(d)(2). A flight simulator and flight training device cannot be used more than 0.6 hours to meet the training requirements, and use of the flight training device is limited to 0.4 hours of the 0.6 hours permitted. The course must include—

(i) Three hours of cross country training in a multiengine airplane, except as provided under §61.111 of this chapter;

(ii) Three hours of nighttime flight training in a multiengine airplane that includes one cross country flight of more than 100 nautical miles total distance in a multiengine airplane, and 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport;

(iii) Three hours of flight training in a multiengine airplane on the control and maneuvering of a multiengine airplane solely by reference to instruments, including straight and level flight, constant airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight; and

(iv) Three hours of flight training in a multiengine airplane within 2 calendar months before the date of the practical test.

(2) For the commercial pilot certificate, the course requires 10 hours of training on the areas of operations under appendix D of part 141, paragraph 4(d)(2). A flight simulator and flight training device cannot be used more than 3 hours to meet the training requirements, and use of the flight training device is limited to 2 hours of the 3 hours permitted. The course must include—

(i) Five hours of instrument training in a multiengine airplane that must include training using a view-limiting device on for attitude instrument flying, partial panel skills, recovery from unusual flight atti-

tudes, and intercepting and tracking navigational systems;

(ii) Ten hours of training in a multiengine airplane that has retractable landing gear, flaps, and a controllable pitch propeller, or is turbine-powered;

(iii) One 2-hour cross country flight during daytime conditions in a multiengine airplane and, a total straight-line distance of more than 100 nautical miles from the original point of departure;

(iv) One 2-hour cross country flight during nighttime conditions in a multiengine airplane and, a total straight-line distance of more than 100 nautical miles from the original point of departure; and

(v) Three hours of flight training in a multiengine airplane within 2 calendar months before the date of the practical test.

(3) For the airline transport pilot certificate, the course requires 25 hours of training in a multiengine airplane on the areas of operation of appendix E to part 141, paragraph 4.(c) that includes 15 hours of instrument training. A flight simulator and flight training device cannot be used more than 12.5 hours to meet the training requirements, and use of the flight training device is limited to 6.25 hours of the 12.5 hours permitted.

(1) Course for a rotorcraft additional helicopter class rating.

(1) For the recreational pilot certificate, the course requires 3 hours of flight training on the areas of operations under appendix A of part 141, paragraph 4.(c)(2) that includes—

(i) Two hours of flight training to and at an airport that is located more than 25 nautical miles from the airport where the applicant normally trains, with three takeoffs and three landings, except as provided under §61.100 of this chapter; and

(ii) Three hours of flight training in a helicopter within 2 calendar months before the date of the practical test.

(2) For the private pilot certificate, the course requires 3 hours flight training on the areas of operations under appendix B of part 141, paragraph 4.(d)(3). A flight simulator and flight training device cannot be used more than 0.6 hours to meet the training requirements, and use of the flight training device is limited to 0.4 hours of the 0.6 hours permitted. The course must include—

(i) Three hours of cross country training in a helicopter, except as provided under §61.111 of this chapter;

(ii) Three hours of nighttime flight training in a helicopter that includes one cross country flight of more than 50 nautical miles total distance, and 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport; and

(iii) Three hours of flight training in a helicopter within 2 calendar months before the date of the practical test.

(3) For the commercial pilot certificate, the course requires 5 hours flight training on the areas of operations under appendix D of part 141, paragraph 4.(d)(3). Use of a flight simulator and flight training device in the approved training course cannot exceed 1 hour; however, use of the flight training device cannot exceed 0.7 of the one hour. The course must include—

(i) Five hours on the control and maneuvering of a helicopter solely by reference to instruments, and must include training using a view-limiting device for attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems. This aeronautical experience may be performed in an aircraft, flight simulator, flight training device, or an aviation training device;

(ii) One 2-hour cross country flight during daytime conditions in a helicopter and, a total straight-line distance of more than 50 nautical miles from the original point of departure;

(iii) One 2-hour cross country flight during nighttime conditions in a helicopter and a total straight-line distance of more than 50 nautical miles from the original point of departure; and

(iv) Three hours of flight training in a helicopter within 2 calendar months before the date of the practical test.

(4) For the airline transport pilot certificate, the course requires 25 hours of flight training in a helicopter on the areas of operation under appendix E of part 141, paragraph 4.(c) that includes 15 hours of instrument training. A flight simulator and flight training device cannot be used more than 12.5 hours to meet the training requirements, and use of the flight training device is limited to 6.25 hours of the 12.5 hours permitted.

(m) Course for a rotorcraft additional gyroplane class rating.

(1) For the recreational pilot certificate, the course requires 3 hours flight training on the areas of operations of appendix A to part 141, paragraph 4.(c)(3) that includes—

(i) Except as provided under §61.100 of this chapter, 2 hours of flight training to and at an airport that is located more than 25 nautical miles from the airport where the applicant normally trains, with three takeoffs and three landings; and

(ii) Within 2 calendar months before the date of the practical test, 3 hours of flight training in a gyroplane.

(2) For the private pilot certificate, the course requires 3 hours flight training on the areas of operations of appendix B to part 141, paragraph 4.(d)(4). A flight simulator and flight training device cannot be used more than 0.6 hours to meet the training requirements, and use of the flight training device is limited to 0.4 hours of the 0.6 hours permitted. The course must include—

(i) Three hours of cross country training in a gyroplane;

(ii) Three hours of nighttime flight training in a gyroplane that includes one cross country flight of more than 50 nautical miles total distance, and 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport; and

(iii) Three hours of flight training in a gyroplane within 2 calendar months before the date of the practical test.

(3) For the commercial pilot certificate, the course requires 5 hours flight training on the areas of operations of appendix D to part 141, paragraph 4.(d)(4). A flight simulator and flight training device cannot be used more than 1 hour to meet the training requirements, and use of the flight training device is limited to 0.7 hours of the 1 hour permitted. The course must include—

(i) 2.5 hours on the control and maneuvering of a gyroplane solely by reference to instruments, and must include training using a view-limiting device for attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems. This aeronautical experience may be performed in an aircraft, flight simulator, flight training device, or an aviation training device.

(ii) Three hours of cross country flight training in a gyroplane, except as provided under §61.111 of this chapter;

(iii) Two hours of flight training during nighttime conditions in a gyroplane at an airport that includes 10 takeoffs and 10 landings to a full stop (with each landing involving a flight in the traffic pattern); and

(iv) Three hours of flight training in a gyroplane within 2 calendar months before the date of the practical test.

(n) Course for a lighter-than-air additional airship class rating.

(1) For the private pilot certificate, the course requires 20 hours of flight training on the areas of operation under appendix B of part 141, paragraph 4.(d)(7). A flight simulator and flight training device cannot be used more than 4 hours to meet the training requirements, and use of the flight training device is limited to 3 hours of the 4 hours permitted. The course must include—

(i) Three hours of cross country training in an airship, except as provided under §61.111 of this chapter;

(ii) Three hours of nighttime flight training in an airship that includes one cross country flight of more than 25 nautical miles total distance, and 5 takeoffs and 5 landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport;

(iii) Three hours of flight training in an airship on the control and maneuvering of an airship solely by reference to instruments, including straight and level flight, constant

airspeed climbs and descents, turns to a heading, recovery from unusual flight attitudes, radio communications, and the use of navigation systems/facilities and radar services appropriate to instrument flight; and

(iv) Three hours of flight training in an airship within 2 calendar months before the date of the practical test.

(2) For the commercial pilot certificate, the course requires 55 hours of flight training on the areas of operation under appendix D of part 141, paragraph 4.(d)(7). A flight simulator and flight training device cannot be used more than 16.5 hours to meet the training requirements, and use of the flight training device is limited to 11 hours of the 16.5 hours permitted. The course must include—

(i) Three hours of instrument training in an airship that must include training using a view-limiting device for attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems;

(ii) One hour cross country flight during daytime conditions in an airship that consists of a total straight-line distance of more than 25 nautical miles from the original point of departure;

(iii) One hour cross country flight during nighttime conditions in an airship that consists of a total straight-line distance of more than 25 nautical miles from the original point of departure; and

(iv) Three hours of flight training in an airship within 2 calendar months before the date of the practical test.

(o) Course for a lighter-than-air additional gas balloon class rating.

(1) For the private pilot certificate, the course requires eight hours of flight training that includes 5 training flights on the areas of operations under appendix B of part 141, paragraph 4.(d)(8). A flight simulator and flight training device cannot be used more than 1.6 hours to meet the training requirements, and use of the flight training device is limited to 1.2 hours of the 1.6 hours permitted. The course must include—

(i) Two flights of 1 hour each;

(ii) One flight involving a controlled ascent to 3,000 feet above the launch site; and

(iii) Two flights within 2 calendar months before the date of the practical test.

(2) For the commercial pilot certificate, the course requires 10 hours of flight training that includes eight training flights on the areas of operations of appendix D to part 141, paragraph 4.(d)(8). A flight simulator and flight training device cannot be used more than 3 hours to meet the training requirements, and use of the flight training device is limited to 2 hours of the 3 hours permitted. The course must include—

(i) Two flights of 1 hour each;

(ii) One flight involving a controlled ascent to 5,000 feet above the launch site; and

(iii) Two flights within 2 calendar months before the date of the practical test.

(p) Course for a lighter-than-air additional hot air balloon class rating.

(1) For the private pilot certificate, the course requires 8 hours of flight training that includes 5 training flights on the areas of operations of appendix B to part 141, paragraph 4.(d)(8). A flight simulator and flight training device cannot be used more than 1.6 hours to meet the training requirements, and use of the flight training device is limited to 1.2 hours of the 1.6 hours permitted. The course must include—

(i) Two flights of 30 minutes each;

(ii) One flight involving a controlled ascent to 2,000 feet above the launch site; and

(iii) Two flights within 2 calendar months before the date of the practical test.

(2) For the commercial pilot certificate, the course requires 10 hours of flight training that includes eight training flight on the areas of operation of appendix D to part 141, paragraph 4.(d)(8). A flight simulator and flight training device cannot be used more than 3 hours to meet the training requirements, and use of the flight training device is limited to 2 hours of the 3 hours permitted. The course must include—

(i) Two flights of 30 minutes each.

(ii) One flight involving a controlled ascent to 3,000 feet above the launch site; and

(iii) Two flights within 2 calendar months before the date of the practical test.

5. *Stage checks and end-of-course tests.* (a) Each student enrolled in an additional aircraft category rating course or an additional aircraft class rating course must satisfactorily accomplish the stage checks and end-of-course tests, in accordance with the school's approved training course, consisting of the approved areas of operation in section No. 4 of this appendix that are appropriate to the aircraft category and class rating for which the course applies at the appropriate pilot certificate level.

(b) Each student must demonstrate satisfactory proficiency prior to receiving an endorsement to operate an aircraft in solo flight.

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APPENDIX J TO PART 141—AIRCRAFT TYPE RATING COURSE, FOR OTHER THAN AN AIRLINE TRANSPORT PILOT CERTIFICATE

1. *Applicability.* This appendix prescribes the minimum curriculum for an aircraft type rating course other than an airline transport pilot certificate, for:

(a) A type rating in an airplane category—single-engine class.