

responsible Flight Standards office at any time within 60 days before to the expiration date. Renewal of approval will depend upon the course operator meeting the current conditions for approval and having a satisfactory record as an operator.

[Doc. No. 1179, 27 FR 7970, Aug. 10, 1962, as amended by Amdt. 63-6, 31 FR 9211, July 6, 1966; Amdt. 63-28, 54 FR 39291, Sept. 25, 1989; Docket FAA-2017-0733, Amdt. 63-39, 82 FR 34398, July 25, 2017; Docket FAA-2018-0119, Amdt. 63-40, 83 FR 9170, Mar. 5, 2018]

#### APPENDIX C TO PART 63—FLIGHT ENGINEER TRAINING COURSE REQUIREMENTS

(a) *Training course outline*—(1) *Format*. The ground course outline and the flight course outline are independent. Each must be contained in a looseleaf binder to include a table of contents. If an applicant desires approval of both a ground school course and a flight school course, they must be combined in one looseleaf binder that includes a separate table of contents for each course. Separate course outlines are required for each type of airplane.

(2) *Ground course outline*. (i) It is not mandatory that the subject headings be arranged exactly as listed in this paragraph. Any arrangement of subjects is satisfactory if all the subject material listed here is included and at least the minimum programmed hours are assigned to each subject. Each general subject must be broken down into detail showing the items to be covered.

(ii) If any course operator desires to include additional subjects in the ground course curriculum, such as international law, flight hygiene, or others that are not required, the hours allotted these additional subjects may not be included in the minimum programmed classroom hours.

(iii) The following subjects and classroom hours are the minimum programmed coverage for the initial approval of a ground training course for flight engineers. Subsequent to initial approval of a ground training course an applicant may apply to the Administrator for a reduction in the programmed hours. Approval of a reduction in the approved programmed hours is based on improved training effectiveness due to improvements in methods, training aids, quality of instruction, or any combination thereof.

Subject	Classroom hours
Federal Aviation Regulations .....	10
To include the regulations of this chapter that apply to flight engineers .....	
Theory of Flight and Aerodynamics .....	10
Airplane Familiarization .....	90

Subject	Classroom hours
To include as appropriate: Specifications. Construction features. Flight controls. Hydraulic systems. Pneumatic systems. Electrical systems. Anti-icing and de-icing systems. Pressurization and air-conditioning systems. Vacuum systems. Pilot static systems. Instrument systems. Fuel and oil systems. Emergency equipment.	
Engine Familiarization .....	45
To include as appropriate: Specifications. Construction features. Lubrication. Ignition. Carburetor and induction, supercharging and fuel control systems Accessories. Propellers. Instrumentation. Emergency equipment.	
Normal Operations (Ground and Flight) .....	50
To include as appropriate: Servicing methods and procedures. Operation of all the airplane systems. Operation of all the engine systems. Loading and center of gravity computations. Cruise control (normal, long range, maximum endurance) Power and fuel computation. Meteorology as applicable to engine operation	
Emergency Operations .....	80
To include as appropriate: Landing gear, brakes, flaps, speed brakes, and leading edge devices Pressurization and air-conditioning. Portable fire extinguishers. Fuselage fire and smoke control. Loss of electrical power. Engine fire control. Engine shut-down and restart. Oxygen.	
Total (exclusive of final tests) .....	235

The above subjects, except Theory of Flight and Aerodynamics, and Regulations must apply to the same type of airplane in which the student flight engineer is to receive flight training.

(3) *Flight Course Outline*. (i) The flight training curriculum must include at least 10 hours of flight instruction in an airplane specified in §63.37(a). The flight time required for the practical test may not be credited as part of the required flight instruction.

(ii) All of the flight training must be given in the same type airplane.

(iii) As appropriate to the airplane type, the following subjects must be taught in the flight training course: