

COURSE COMPETENCY

ASC1610 Aircraft Engines and Structure Theory

Course Description

This is a foundation course in aircraft engines and structure. Students will learn the elements of aircraft engines, engine theory, construction, systems, operating procedures, performance diagnosis, and aircraft structures.

Course Competency	Learning Outcomes
<p>Competency 1: The student will demonstrate knowledge and understanding of aircraft engines by:</p>	<ol style="list-style-type: none"> 1. Critical thinking 2. Numbers / Data 3. Computer / Technology Usage
<ol style="list-style-type: none"> a. Discussing the basic theory and operation of aircraft reciprocating engines. b. Explaining the theory and operation of the various engine systems and components, including: carburetors, fuel injection systems, ignition systems, magnetos, turbochargers, superchargers, and lubrication systems. c. Summarizing the basic theory and operation of various propellers and their components. d. Describing the theory and operation of a standard hydraulic system and its components. e. Defining the theory and operation of certain electrical systems and their components. 	
<p>Competency 2: The student will demonstrate knowledge and understanding of aircraft structures by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Computer / Technology Usage
<ol style="list-style-type: none"> a. Discussing basic aircraft structure designs (monocoque and semi-monocoque). b. Identifying the major stresses on an aircraft structure and identifying various fuselage designs. c. Explaining fuselage, wing, and empennage structures. d. Distinguishing primary, secondary, and auxiliary control surfaces and their operation. 	

<ul style="list-style-type: none"> e. Analyzing the need for pressurization and the major structural stresses associated with the same. f. Pointing out the basic requirements of a pressurization system. g. Recalling the dangers associated with pressurization, citing historical accidents h. Describing manual and automatic operation of pressurization systems and cabin altitude 	
<p>Competency 3: The student will analyze aircraft manuals and produce reasoned, critical responses to common concerns with aircraft engines and aircraft structures by:</p>	<ul style="list-style-type: none"> 1. Communication 2. Critical thinking 3. Computer / Technology Usage
<ul style="list-style-type: none"> a. Describing the various operational limitations of aircraft engines, the location of engine operational data, and the danger of exceeding manufacturer limitations. b. Identifying the various operational limitations of aircraft structures, the location of structural limit data, and the danger of exceeding manufacturer limitations. c. Finding pertinent information involving the engine and its structural limits and discussing operational concerns from the standpoint of the pilot in command. 	

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