



Course Description

ASC1610 | Aircraft Engines and Structure Theory | 3.00 credits

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 Competencies:

Competency 1: The student will demonstrate knowledge and understanding of aircraft engines by:

1. Discussing the basic theory and operation of aircraft reciprocating engines
2. 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
3. Summarizing the basic theory and operation of various propellers and their components
4. Describing the theory and operation of a standard hydraulic system and its components
5. Defining the theory and operation of certain electrical systems and their components

Competency 2: The student will demonstrate knowledge and understanding of aircraft structures by:

1. Discussing basic aircraft structure designs (monocoque and semi-monocoque)
2. Identifying the significant stresses on an aircraft structure and identifying various fuselage designs
3. Explaining fuselage, wing, and empennage structures
4. Distinguishing primary, secondary, and auxiliary control surfaces and their operation
5. Analyzing the need for pressurization and the major structural stresses associated
6. Pointing out the basic requirements of a pressurization system
7. Recalling the dangers associated with pressurization, citing historical accidents
8. Describing manual and automatic operation of pressurization systems and cabin altitude

Competency 3: The student will analyze aircraft manuals and produce reasoned, critical responses to common concerns with aircraft engines and aircraft structures by:

1. Describing the various operational limitations of aircraft engines, the location of engine operational data, and the danger of exceeding manufacturer limitations
2. Identifying the various operational limitations of aircraft structures, the location of structural limit data, and the danger of exceeding manufacturer limitations
3. Finding pertinent information involving the engine and its structural limits and discussing operational concerns from the standpoint of the pilot in command

Learning Outcomes:

- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Use computer and emerging technologies effectively