Miami Dade College

Course Description

ATT2133 | Multi-Engine Pilot Theory | 2.00 Credits

This course introduces basic theories of multi-engine pilot operations to prepare students for the FAA Multi-Engine oral and practical exams. Students will acquire the aeronautical knowledge required to act as a multi-engine rated pilot.

Course Competencies:

Competency 1: The student will demonstrate knowledge and understanding of human factors as they relate to multi-engine aircraft by:

1. Understanding flawed training methods of the past
2. Conceptualizing whether a multi-engine aircraft is safer than a single-engine aircraft
3. Visualizing and understanding situational awareness and workload management
4. Discussing and understanding the physiology of high-altitude flight
5. Discussing the pilot's mental and physical preparedness for the flight and aeronautical decision-making

Competency 2: The student will demonstrate a complete understanding of multi-engine aircraft systems (emphasis will be placed on the Piper Seminole aircraft) by:

1. Recognizing and explaining different types of power plants and their components
2. Understanding cooling and exhaust systems
3. Exhibiting proficiency in reading and interpreting engine instruments
4. Understanding and explaining engine-driven systems
5. Explaining the operation and identifying parts of the propeller and governor system
6. Understanding and demonstrating the proper use of several fuel systems
7. Explaining the regular and emergency use of the landing gear system and its inner workings
8. Explaining the operation and proper use of oxygen systems

Competency 3: The student will be able to perform a complete weight and balance calculation and understand how this weight and balance will affect the performance and controllability of the aircraft in different flight conditions and aircraft configurations by:

1. Understanding weight and balance terminology
2. Explaining the relationship between aircraft v- speeds, gross weight, and atmospheric conditions
3. Discussing the effects of a forward cg versus an aft cg on the performance and maneuverability of the aircraft in several flight configurations and atmospheric conditions
4. explaining spin characteristics of an improperly loaded aircraft

Competency 4: The student will demonstrate a thorough understanding of multi-engine aerodynamics and FAR 23.149 by:

1. Understanding the boundary layers and types of airflow
2. Conceptualizing induced flow, asymmetrical thrust, and p-factor
3. Understanding and explaining VMC and critical engine
4. Describing the side slip as it pertains to two multiengine out procedures
5. Discussing the effects of a wind milling propeller
6. Understanding density altitude as it relates to VMC
7. Discussing multi-engine aircraft V- speeds (VYSE, VYXE, VMC, etc.)

Competency 5: The student will demonstrate the ability to act as pilot in command of a multi-engine aircraft by:

1. Understanding and demonstrating proper engine-out procedures in all phases of flight
2. Discussing and understanding all required multi-engine maneuvers for the flight test, as per FAA-S- 8081-12B (practical test standards) for commercial multi-engine pilots

3. Planning and explaining cross-country in a multi-engine aircraft
4. Being able to properly handle any emergency that may occur during ground and flight operations
5. Properly demonstrating and exhibiting knowledge of multi-engine go-arounds
6. Exhibiting the proper procedure for multi-engine short and soft field take-offs and landings
7. Understanding multi-engine procedures as it pertains to IFR flight
8. Discussing and understanding departure V- speeds, including accelerate-stop and accelerate-go procedures
9. Exhibiting knowledge of proper pre-flight and ground handling procedures

Learning Outcomes:

- Communicate effectively using listening, speaking, reading, and writing skills
- Use quantitative analytical skills to evaluate and process numerical data
- Use computer and emerging technologies effectively