

Aircraft Engineering Introductory Year

AE0301 Engineering Fundamentals

Level 0 CATS 15

This module introduces the fundamentals of engineering mathematics, science and electrical engineering. The engineering mathematics element includes basic arithmetic operations and calculations, evaluation of basic algebraic expressions and production and use of graphs of mathematical data. Basic atomic structure and terms used in statics, kinetics, dynamics and heat theory are described in the science section. Distribution of electrical charges, static electricity, sources of electricity and terms used in both dc and ac are discussed in the electrical engineering phase of the module. This module also satisfies the knowledge requirements for EASA Part 66 modules 1,2 and 3 to category A level.

AE0302 Aerodynamics and Electronic Instrument Systems

Level 0 CATS 15

This module introduces the student to basic aerodynamics and aircraft instruments. The purpose of international standard atmosphere and basic aerodynamic terms are introduced. This is followed by basic theory of flight, stability and lift augmentation. The layout of cockpit instruments and the information shown on them is also discussed. Basic computer terms and the use of computers in aircraft is then introduced, including precautions to be taken when handling sensitive electronic devices. This module also satisfies the knowledge requirements for EASA Part 66 modules 8 and 5 to category A level.

AE0303 Aircraft Materials and Hardware

Level 0 CATS 15

The use, properties and treatment of many different materials in aircraft is introduced in this module. Corrosion in metals, the extensive use of composite materials and defects and repair of aircraft materials are discussed. The second part of the module is concerned with the hardware used in aircraft. This includes the properties, characteristics, uses and identification of fasteners, pipes, bearings, transmission systems, flying control transmission systems and aircraft electrical cables and connectors. This module also satisfies the knowledge requirements for EASA Part 66 module 6 to category A level.

AE0304 Aircraft Maintenance

Level 0 CATS 15

This module introduces the student to the practical aspect of aircraft maintenance; starting with safety precautions and the use of basic hand tools and materials. The use and interpretation of aircraft drawings is followed by the practical aspects of fitting electrical cables, rivets, pipelines, springs, bearings, transmission and flying control systems. The associated safety precautions when moving aircraft on the ground, re-fuelling, assembling and repairing aircraft parts is discussed as well as storage and the effects of the environment on aircraft. The module concludes with maintenance procedures and the associated documentation. This module also satisfies the knowledge requirements for EASA Part 66 module 7 to category A level.

AE0305 Human Factors and Aviation Legislation

Level 0 CATS 15

This module introduces both the human and legal element into aircraft maintenance. The human factors element explains how social, cultural, physical and psychological factors may affect the performance of an engineer. Case studies concerning aircraft accidents/incidents and methods of avoiding maintenance related errors are discussed.

The development of both National and International aviation legislation is introduced in the Legislation element. The relationship between EASA-Ops, EASA-145, EASA-Part 66, EASA Part 147 and EASA Maintenance is discussed and the applicable National and International legislative requirements are introduced. This module also satisfies the knowledge requirements for EASA Part 66 modules 9 and 10 category A level.

AE0310 Turbine Aeroplanes

Level 0 CATS 30

This module introduces the student to aeroplane flying controls, structures and some of the associated aircraft systems. The operation and effect of aircraft primary and secondary controls is introduced both at low speed and high speed. This is followed by an introduction to the basic construction methods used in aircraft and associated parts also methods used to check accuracy of construction. The systems element introduces the flight controls, landing gear, fuel, hydraulic power, waste water systems, air-conditioning and cabin pressurisation, ice and rain protection, lighting, oxygen, fire and smoke detection, and pneumatics, and introduces the basic operation of electrical, instrument, auto-flight, communication, navigation and on-board maintenance systems. Maintenance procedures and basic fault finding techniques are also introduced. This module satisfies the knowledge requirements for EASA Part 66 module 11 to category A level.

AE0308 Turbine Engines and Propellers

Level 0 CATS 15

This module introduces the student to the fundamentals of gas turbine engines, propellers and their associated systems. The student is first introduced to the basic construction and operation of the various types of turbine engines and their major components. The module then describes the operation and basic components in the lubrication, fuel, air, starting, ignition, indication and fire protection systems. The turbine engine element is completed by discussion of power-plant installation, engine monitoring and ground operation. The propeller element introduces the student to basic terms associated with propeller operation and aerodynamics. The basic construction of propellers, propeller control and over-speed mechanisms is then explained. The module is concluded by a basic description of propeller maintenance. This module also satisfies the knowledge requirements for EASA Part 66 modules 15 and 17 to category A level.

AE0309 Workshop and Hangar Practice

Level 0 CATS 30

This module introduces the student to the practical element of the course. The correct use of appropriate tools, equipment and test equipment in order to carry out inspections, tests and checks is practically assessed. The student is also introduced to the use of the correct aircraft manuals in order to carry out maintenance work on components safely and to demonstrating a responsible attitude to airworthiness. The student will be expected to display maturity, integrity and responsibility in demonstrating key skills in areas of self organisation, communication, interpersonal relationships, team work, problem solving and planning. The student will keep a record of their practical work and identify the skills obtained during the practical work. This module also partly satisfies the in-course practical requirements for EASA Part 66 to category A level.