

ACT - AIRCRAFT TECHNOLOGY

ACT 100 Explain principles of aircraft physical and mechanical science (6-0-6)

The aim of the course is to develop students' knowledge and skills in atomic structures, statics, dynamics, kinetics, fluid dynamics, fundamentals thermodynamics, optics, waves, gyroscopes, sound, and vibration.

ACT 101 Demonstrate principles of DC electrical fundamentals (5-3-8)

The aim of this unit is to provide a comprehensive understanding of DC electrical fundamentals. Through exploring electric current principles, electrical terms, forms of electrical generation, and direct current sources, learners will develop a strong foundation. Practical skills such as measuring voltages, currents, and resistance, calculating power and energy, and understanding magnetism and inductors will be emphasized. The course aims to enable learners to apply their knowledge to practical tasks related to DC electrical fundamentals.

ACT 102 Apply principles of AC electrical fundamentals (5-3-8)

This unit is a continuation of the DC Electrical Fundamentals unit and covers an advanced level with emphasis put on electrical terms such as resistance, power, capacitance, magnetism, inductance, AC theory, resistive, capacitive, and inductive circuits. Additionally, transformers, filters, AC generators, motors, and frequency-dependent devices are covered.

ACT 104 Demonstrate the knowledge on advanced aircraft digital principles for aeromechanics (6-2-8)

Explore digital techniques and electronic instrument systems with reference to typical systems arrangement and aircraft cockpit layout. Learn essentials of electronic instrument systems, numbering systems, data conversion, data buses, logic circuits and basic computer structure. Discuss integration of circuits Electronic displays, software management and control. Practical activities include typical electronic-digital aircraft systems and the use of aircraft simulators to interrogate systems faults and functioning of cockpit systems.

Prerequisites: ACT 103

ACT 105 Demonstrate knowledge understanding and applications on aircraft materials and hardware (5-3-8)

This course aims to develop students' understanding and skills of the characteristics, types, and uses of aircraft materials and hardware, and familiarize them with the types, causes, removal of corrosion, aircraft hardware, develop hands-on practices on using bolts, screws, cables, springs, gears, belts, bearing,...etc.

Prerequisites: ACT 100

ACT 106 Demonstrate the knowledge and applications of aerodynamic principles (6-1-7)

This course introduces the advanced concepts of atmosphere, aerodynamics, theory of flight and factors affecting aircraft stability and control. It provides the knowledge about physics of atmosphere; and basic aerodynamics including: • The airflow around a body and aerofoil sections • The aerodynamic forces acting on the aircraft • Generation of aerodynamic lift and different types of aerodynamic drag • The course also includes theory of flight: • The aerodynamic forces and aircraft performance during steady level flight • Climb and descent, and turning • Aircraft stability and flight dynamics

Prerequisites: MAT 101, ACT 100

ACT 107 Demonstrate understanding of human factors in the aviation industry (3-1-4)

This aim of this course is to improve the level of Human Factors awareness and to improve the understanding of Human Performance issues related to activities in a maintenance environment. The course provides students with the necessary knowledge and skills to appraise human error and factors affecting human performance, and to apply tools and methods for error prediction and measurement. Topics covered also include social physiology, physical environments, tasks, communication and hazards in the workplace.

ACT 108 Develop knowledge and skills on general aircraft maintenance practices (6-3-9)

The objective of this unit is to enable students to demonstrate competence in working effectively and safely in an aircraft maintenance organization by understanding and applying safety precautions for aircraft and workshops. The unit aims also to introduce to learners workshop practices, tools, calibration standards, operation, function and use of common general testing equipment.

ACT 109 Demonstrate knowledge of physics fundamentals - Part 1 (3-0-3)

Corequisites: ACT 110

ACT 110 Demonstrate knowledge of physics fundamentals - Part 2 (3-0-3)

The aim of the course is to develop students' knowledge and skills in atomic structures, statics, dynamics, kinetics, fluid dynamics, fundamentals thermodynamics, optics, waves, sound, and vibration.

Corequisites: ACT 109

ACT 111 Demonstrate knowledge of electrical fundamentals - Part 1 (4-0-4)

This unit covers the principles of electricity such as electron theory, static electricity and conduction, electrical terminology, generation of electricity, DC sources of electricity, and DC theory. In addition, this unit introduces the concept of direct current circuits and studies its applications and its fundamental theories.

ACT 112 Apply Principles of Electrical Fundamentals - Part 1 (0-4-2)

This unit covers the principles of electricity, such as electron theory, static electricity, and conduction, electrical terminology, generation of electricity, DC sources of electricity, and DC theory. Additionally, this unit introduces the concept of direct current circuits and studies their applications and fundamental theories.

ACT 113 Develop knowledge of aircraft maintenance practices - Part 1 (4-0-4)

The aim of this unit is to enable students to demonstrate competence in working effectively and safely in an aircraft maintenance organization by understanding and applying safety precautions for aircraft and workshops. The unit aims also to introduce learners' workshop practices, tools, calibration standards, operation, function, and use of common general testing equipment. This unit includes an introduction to safety precautions for aircraft and workshops; understanding of the hazards that may be encountered in an aviation engineering environment and their safety precautions to counter

ACT 114 Apply skills of aircraft maintenance practices - Part 1 (0-4-2)

The aim of this unit is to enable students to demonstrate competence in working effectively and safely in an aircraft maintenance organization by understanding and applying safety precautions for aircraft and workshops. The unit aims also to introduce learners' workshop practices, tools, calibration standards, operation, function, and use of common general testing equipment. This unit includes an introduction to safety precautions for aircraft and workshops; understanding of the hazards that may be encountered in an aviation engineering environment and their safety precautions to countermeasure.

ACT 115 Demonstrate knowledge of electronic fundamentals (3-0-3)

The course aims to develop student knowledge and skills in the area of functional principles of semiconductors and semiconductor devices such as diodes and transistors and their applications. The use of transistors and diodes in integrated circuits. The installation of semiconductors on printed circuit boards PCB and the basics of synchro servo techniques.

ACT 116 Apply principles of electronic fundamentals (0-2-2)**ACT 117 Demonstrate understanding of human factors in aviation industry (4-0-4)**

The aim of this course is to improve the level of Human Factors awareness and to improve the understanding of Human Performance issues related to activities in a maintenance environment. The course provides students with the necessary knowledge and skills to appraise human error and factors affecting human performance, and to apply tools and methods for error prediction and measurement. Topics covered also include social physiology, physical environments, tasks, communication, and hazards in the workplace.

ACT 140 Apply and solve problems in mathematics for aircraft maintenance (4-0-4)

This unit aims to develop students' ability to solve algebraic operations on numbers, exponents, roots and radicals, equations, inequalities, scientific notations, algebraic operations on expressions, solving formulas and literal equations. It also covers basic geometry and trigonometry.

ACT 200 Demonstrate knowledge of aircraft materials and hardware - Part 1 (4-0-4)

Explore aircraft material properties and how these influence basic aircraft structural design and repair techniques. Topics taught in this course include ferrous and nonferrous materials, composites and non-metallic materials as well as hardness, tensile and fatigue testing and corrosion. Learn material handling and understand the reason for selection of materials and their properties, screw threads & bolts, studs & screws in fasteners.

ACT 201 Apply skills on using aircraft materials and hardware (0-4-2)

This course aims to develop students' understanding and skills of the characteristics, types, and uses of aircraft materials and hardware, and familiarize them with the types, causes, removal of corrosion and aircraft hardware.

ACT 202 Demonstrate knowledge of aircraft materials and hardware - Part 2 (4-0-4)

This unit aims to develop students' understanding and skills of the characteristics, types, and uses of aircraft materials and hardware, and familiarize them with the types, causes, removal of corrosion and aircraft hardware.

ACT 203 Apply skills on using aircraft materials and hardware- Part-2 (0-3-3)

This course aims to develop students' understanding and skills of the characteristics, types, and uses of aircraft materials and hardware, and familiarize them with the types, causes, removal of corrosion and aircraft hardware.

ACT 204 Demonstrate knowledge on applications of aerodynamic principles (3-0-3)

This course introduces the advanced concepts of atmosphere, aerodynamics, theory of flight and factors affecting aircraft stability and control. It provides the knowledge about physics of atmosphere; and basic aerodynamics including: The airflow around a body and aero foil sections, The aerodynamic forces acting on the aircraft, Generation of aerodynamic lift and different types of aerodynamic drag. The course also includes theory of flight; The aerodynamic forces and aircraft performance during steady level flight, Climb and descent, and turning and Aircraft stability and flight dynamics.

ACT 205 Apply aerodynamic principles for aircraft maintenance (0-1-1)

This course introduces the advanced concepts of atmosphere, aerodynamics, theory of flight and factors affecting aircraft stability and control. It provides the knowledge about physics of atmosphere; and basic aerodynamics including: • The airflow around a body and aerofoil sections • The aerodynamic forces acting on the aircraft • Generation of aerodynamic lift and different types of aerodynamic drag • The course also includes theory of flight: • The aerodynamic forces and aircraft performance during steady level flight • Climb and descent, and turning • Aircraft stability and flight dynamics.

ACT 206 Demonstrate Knowledge on Electrical Fundamentals - Part 2 (4-0-4)

This unit covers the principles of electricity such as electron theory, static electricity and conduction, electrical terminology, generation of electricity, DC sources of electricity, and DC theory. In addition, this unit introduces the concept of direct current circuits and studies its applications and its fundamental theories.

ACT 207 Apply Principles of Electrical Fundamentals - Part 2 (0-3-3)

This unit covers the principles of electricity such as electron theory, static electricity and conduction, electrical terminology, generation of electricity, DC sources of electricity, and DC theory. In addition, this unit introduces the concept of direct current circuits and studies its applications and its fundamental theories. At the end of this unit, learners will be able to Perform practical tasks related to the basic principles of AC electrical fundamentals.

ACT 208 Develop knowledge of aircraft maintenance practices - Part 2 (3-0-3)

Covers electrical wiring and interconnect system (EWIS) of a modern aircraft. Examine cables, loom construction and interconnect ability, connector types, pins, plugs sockets, as well as current and voltage ratings. Discover the operation, function and use of avionic test equipment, along with soldering and inspection techniques. Experiment codes and parameters for constituent parts.

ACT 209 Apply Skills of Aircraft Maintenance Practices - Part 2 (0-4-2)

The course aims to put the student under real working environment to deal with aircrafts electrical faults, cooperation with colleagues, dealing with test equipment and tool crib shop and be familiarized with technical and safety procedures.

ACT 210 Demonstrate knowledge of aircraft materials and hardware - Part 1 (4-0-4)

Explore aircraft material properties and how these influence basic aircraft structural design and repair techniques. Topics taught in this course include ferrous and nonferrous materials, composites and non-metallic materials as well as hardness, tensile and fatigue testing and corrosion. Learn material handling and understand the reason for selection of materials and their properties, screw threads & bolts, studs & screws in fasteners.

ACT 211 Apply skills on using aircraft materials and hardware (0-4-2)

This course aims to develop students' understanding and skills of the characteristics, types, and uses of aircraft materials and hardware, and familiarize them with the types, causes, removal of corrosion and aircraft hardware

ACT 212 Demonstrate knowledge of aircraft materials and hardware - Part 2 (4-0-4)

This unit aims to develop students' understanding and skills of the characteristics, types, and uses of aircraft materials and hardware, and familiarize them with the types, causes, removal of corrosion and aircraft hardware

ACT 240 Demonstrate knowledge of digital techniques and electronic instrument systems - Part 1 (3-0-3)

The aim of this unit is to develop student knowledge and skills in the area of digital techniques, especially in the field of digital systems in aviation. This course covers an advanced level of digital techniques, emphasizing electronic instrument systems, numbering systems, data buses, data conversion and logic gates, processing of data, and applications of digital techniques in aviation.

ACT 241 Demonstrate knowledge of digital techniques and electronic instrument systems - Part 2 (3-0-3)

This unit is a continuation of the 'Digital Techniques and Electronic Instrument Systems' unit and aims to develop students' knowledge on the operation of electronic displays, characteristics of electrostatic sensitive devices, importance of software management control, information on electromagnetic environment and operations of typical electronic/digital aircraft systems.

ACT 242 Apply Principles of Digital Techniques and Electronic Instrument Systems (0-2-2)

The aim of this unit is to develop student's skills in applying knowledge on the principles of digital techniques and electronic instrument systems.

ACT 243 Develop knowledge of aircraft maintenance practices - Part 3 (4-0-4)

This unit is a continuation of the 'Aircraft Maintenance Practices' unit and covers maintenance associated with pipes and hoses, springs, bearings, transmissions, and control cables. It also introduces the general practices working with sheet metal, composite and non-metallic materials, and concept related to welding, brazing, soldering, and bonding.

Corequisites: ACT 244, ACT 245

ACT 244 Develop Knowledge of Aircraft Maintenance Practices - Part 4 (4-0-4)

This unit is a continuation of the 'Aircraft Maintenance Practices' unit and is intended to familiarize students with importance of aircraft weighing and balancing, procedures related to aircraft handling and storage, special inspection procedures and tests carried out after abnormal events, details about component disassembly methods, inspection, repair and assembly techniques, and finally the importance of maintenance procedures.

ACT 245 Apply Skills of Aircraft Maintenance Practices - Part 3 (0-4-2)

This course equips participants with essential skills in aircraft maintenance and documentation. Topics include proper practices for installing fasteners and wire thread inserts, safety locking procedures, heavy landing inspections, scheduling and tracking maintenance tasks using technical logs and aircraft logbooks, compliance with Airworthiness Directives and Service Bulletins, effective use of manufacturer documentation, and accurate record-keeping.

Corequisites: ACT 243, ACT 244

ACT 246 Demonstrate Knowledge of Construction, Operation, and Maintenance of Propeller (2-0-2)

The aim of this unit is to develop student's ability to demonstrate knowledge and understanding of the fundamental theory of aircraft propeller, propeller construction, propeller pitch control, propeller synchronisation, propeller ice protection, and procedures needed to perform propeller maintenance activities, including propeller storage, and preservation.

Prerequisites: ACT 106

ACT 247 Apply Skills on Maintaining Propeller (0-1-1)

This unit aims to develop student skills in applying knowledge to inspect propeller blades and installation, propeller tracking checks, assess and repair minor damage, also procedures for storing, preserving and maintaining propellers.

Corequisites: ACT 246

ACT 248 Demonstrate Understanding of the GCAA Aviation Legislation (4-0-4)

Describes aviation legislation that is essential for technicians and engineers in the field of aircraft maintenance. Provides an overview of the regulatory framework; certifying staff; approved maintenance organizations; commercial air transportation; aircraft certification; continuing airworthiness, and applicable national and international requirements. Learn the essentials of the regulatory body's relevant rules and guidelines.

ACT 249 Demonstrate Knowledge of Aeroplane Aerodynamics, Structures and Systems - Part 1 (4-0-4)

Introduces aircraft structures, the theory of flight, aerodynamics and flight controls, basics of pitch, roll, yaw, high lift devices along with boundary layer controls and the operations of trim tabs, servo tabs and mass balance devices. Examines aircraft structure: construction, layout, integration and limitations. Covers the effect of stresses and strains induced by flight controls and fail-safe criteria on aircraft structure. Examines also general protection and lightning strike mitigation.

ACT 250 Demonstrate knowledge of aeroplane aerodynamics, structures and systems - Part 2 (4-0-4)

This unit is a continuation of the 'Aeroplane Aerodynamics, Structures and Systems' unit and introduces learners with air conditioning and cabin pressurization systems, equipment and furnishings in cabin, fire protection systems, aircraft flight controls and hydraulic power systems.

ACT 251 Apply Skills on Maintenance of Aeroplane Structures and Systems - Part 1 (0-4-2)

This unit is intended to provide learners with the knowledge and skills about the fundamental principles of the theory of flight including aerodynamics, flight controls operations and systems and high speed flight. It covers the operation and effect of primary, secondary flight controls and basic concepts of high-speed flight; the construction, loads, components, concepts, inspection methods, Airworthiness Requirements, symmetry, alignment checks, corrosion preventions, and lightning strike protection provisions used in aircraft structures; the construction, attachment methods, operations

Corequisites: ACT 249, ACT 250, ACT 252

ACT 252 Apply skills on maintenance of aeroplane structures and systems - Part 2 (0-4-2)

This course aims to develop students' skills in inspecting, maintaining, and repairing critical airplane systems, including Air Conditioning, Pressurization, Fire Detection, and Flight Controls. Participants will learn to perform component removal, installation, and testing, as well as diagnose and troubleshoot faults using schematic diagrams.

ACT 301 Demonstrate Knowledge of Aeroplane Aerodynamics, Structures and Systems - Part 2 (4-0-4)

This unit is a continuation of the 'Aeroplane Aerodynamics, Structures and Systems' unit and introduces learners with air conditioning and cabin pressurization systems, equipment and furnishings in cabin, fire protection systems, aircraft flight controls and hydraulic power systems.

ACT 302 Apply Skills on Maintenance of Aeroplane Structures and Systems - Part 2 (0-4-2)

This course offers comprehensive training in the maintenance and inspection of airplane systems. Students will learn to remove and install air conditioning components, inspect and perform functional tests on air conditioning and pressurization systems, and handle fire detection and extinguisher inspections. The course covers flight control maintenance, including removing, refitting, balancing, and rigging flight control surfaces and systems. Additionally, students will trace fluid flow paths, locate and repair faults using schematic and installation diagrams, and describe expected symptoms of

ACT 303 Demonstrate Knowledge of Aeroplane Aerodynamics, Structures and Systems - Part 3 (4-0-4)

Building on the foundational knowledge from the 'Aeroplane Aerodynamics, Structures, and Systems' unit, this course introduces learners to advanced aircraft systems, including instrument systems, avionic systems, electrical power systems, and lighting. By the end of the course, students will be able to describe the instrument systems (ATA 31), avionic systems, electrical power systems (ATA 24), and aircraft lighting (ATA 33), equipping them with the essential knowledge for a comprehensive understanding of modern aeroplane systems.

ACT 304 Demonstrate Knowledge of Aeroplane Aerodynamics, Structures and Systems - Part 4 (4-0-4)

This course introduces learners to key aircraft systems, including fuel systems, ice and rain protection systems, water and waste systems, pneumatic and vacuum systems, landing gear systems, and oxygen systems. By the end of the course, students will be able to describe the fuel systems (ATA 28), ice and rain protection systems (ATA 30), water and waste systems (ATA 38), pneumatic and vacuum systems (ATA 36), landing gear systems (ATA 32), and oxygen systems (ATA 35), providing them with a comprehensive understanding of these essential aircraft systems.

ACT 305 Demonstrate Knowledge of Aeroplane Aerodynamics, Structures and Systems - Part 5 (4-0-4)

This course covers the features of on-board maintenance systems, integrated modular avionics systems, cabin systems, and information systems. By the end of the course, students will be able to explain the features of on-board maintenance systems (ATA 45), recognize the features of integrated modular avionics systems (ATA 42), explain the purpose, function, operations, and interfaces of cabin systems (ATA 44), and describe the functions and operation of information systems (ATA 46). It provides learners with a comprehensive understanding of these advanced avionics and information systems.

ACT 306 Demonstrate Knowledge of Gas Turbine Engine Principles - Part 1 (4-0-4)

This course aims to develop students' knowledge and understanding of the fundamental principles and systems of aircraft gas turbine engines. It covers the basic principles of gas turbine propulsion and performance, with a focus on the features of air inlets, compressors, combustion sections, turbine sections, and exhaust systems. Students will gain a comprehensive understanding of how these components work together to power aircraft efficiently.

ACT 307 Demonstrate Knowledge of Gas Turbine Engine Principles - Part 2 (4-0-4)

This unit is a continuation of the "Gas Turbine Engine" unit and covers topics related to features and principles of bearings and seals, and properties of lubricants and fuels. It also aims to develop students' knowledge on the layout and operation of various systems i.e. lubrication systems, fuel systems, air systems, starting and ignition systems, and engine indicating systems.

ACT 308 Demonstrate Knowledge of Gas Turbine Engine Principles - Part 3 (4-0-4)

This unit is a continuation of the "Gas Turbine Engine" unit and covers power augmentation systems and configurations of a gas turbine engine, different methods of engine installation, gas turbine engine ground operations and monitoring systems, and methods used to store uninstalled gas turbine engines.

ACT 309 Apply Gas Turbine Engine Principles (4-0-2)

The aim of this unit is to develop student's skills in applying knowledge on the gas turbine engine principles.

ACT 330 Perform Practical Aircraft Experience (On-Job-Experience-OJE) - Part 1 (0-4-2)

Maintenance Experience (ME) is a purely practical module at the end of the training course. This phase of the training requires the student to be placed within an Approved Maintenance Repair Organization (MRO). The purpose of ME is to ensure that the student has exposure to the working environment. On its successful completion, the student should be able to demonstrate effective and safe maintenance activities, use of tools, equipment, procedures, and inspections of components in the supporting workshops for aircraft maintenance and of maintenance of operational aircraft in the hangars.

**ACT 331 Perform Practical Aircraft Experience (On-Job-Experience-OJE)
- Part 2 (0-4-2)**

Maintenance Experience (ME) is a purely practical module at the end of the training course. This phase of the training requires the student to be placed within an Approved Maintenance Repair Organization (MRO). The purpose of ME is to ensure that the student has exposure to the working environment. On its successful completion, the student should be able to demonstrate effective and safe maintenance activities, use of tools, equipment, procedures, and inspections of components in the supporting workshops for aircraft maintenance and of maintenance of operational aircraft in the hangars.

**ACT 332 Perform Practical Aircraft Experience (On-Job-Experience-OJE)
- Part 3 (0-4-2)**

Maintenance Experience is a purely practical module at the end of the training course. It is designed to consolidate the knowledge gained during the course within an operational maintenance environment. The total hours and credits of OJE parts is the mandatory requirement of GCAA for the License course as per AMC 147.200 (d) point 2, which is "At least 30% of the practical training element should be carried in an actual maintenance working environment."

**ACT 333 Perform Practical Aircraft Experience (On-Job-Experience-OJE)
- Part 4 (0-4-2)**

Perform practical tasks safely and by following regulations within the 145- maintenance environment – Part

**ACT 334 Perform Practical Aircraft Experience (On-Job-Experience-OJE)
- Part 5 (0-4-2)**

ACT 334 : Perform practical aircraft experience (On-Job-Experience-OJE)
- Part 5

**ACT 341 Apply Skills on Maintenance of Aeroplane Structures and
Systems - Part 3 (0-4-2)**

Apply skills on maintenance of aeroplane structures and systems - Part 3