



MCAST

MQF Level 3

AE3-A1-21

**Diploma in Aircraft Maintenance
(incorporating EASA Part-66 Category A Basic Course)**

Course Specification

Course Description

This programme is designed specifically to equip learners with the necessary theoretical understanding of aircraft maintenance and related systems and is backed by practical experience in dedicated workshops at mechanic level. The course incorporates the EASA Part-66 Category A basic course which will allow a student to sit for the licence examinations. Also, subject to authorisation by the Part-145 Organization, the licence will permit the holder to issue Certificates of Release to Service following minor scheduled works that may include line maintenance, defect rectification and component changes.

Programme Learning Outcomes

At the end of the programme the students are able to:

- 1. Develop basic theoretical knowledge of the aircraft's applicable systems, structure, operations, maintenance, repair, and troubleshooting according to the approved maintenance data.*
- 2. Understand how to use correctly the manuals and the approved procedures.*
- 3. Make decisions in respect of fault diagnosis and rectification to the maintenance manual level.*
- 4. Prepare for the examinations organised by the Transport Malta Civil Aviation Directorate with regards of Part-66 Category A licence.*

Entry Requirements

MCAST Foundation Certificate

OR

2 SEC/O-Level/SSC&P (Level 3) passes

Compulsory: Physics

Key Information

Awarding Body - MCAST

Accreditation Status - Accredited via MCAST's Self Accreditation Process (MCAST holds Self-Accrediting Status as per 1st schedule of Legal Notice 296/2012)

Type of Programme: Qualification

MQF Level	Examples of Qualifications	'Qualification' Minimum Credits Required	'Award' Credits Required
Level 8	Doctoral Degree Third Cycle Bologna Process	NA	NA
Level 7	Masters Second Cycle Bologna Process	90-120	Less than 30
	Post-Graduate Diploma	60	
	Post-Graduate Certificate	30	
Level 6	Bachelor ²³ /Bachelor (Hons.) ²⁴ First Cycle Bologna Process	180-240	Less than 180
Level 5	Short Cycle Qualification	120	Less than 60
	Undergraduate Higher Diploma	90	
	Undergraduate Diploma	60	
	Undergraduate Certificate	30	
	VET Level 5 Programme ²⁵	60-120	
Level 4	Pre-Tertiary Certificate	30	Less than 120
	VET Level 4 Programme ²⁶	120	
	MATSEC Certificate	NA	
Level 3	VET Level 3 Programme ²⁷	60	Less than 60
	General and Subject Certificate	NA	
Level 2	VET Level 2 Programme ²⁸	60	Less than 60
	General and Subject Certificate	NA	
Level 1	VET Level 1 Programme ²⁹	40	Less than 40
	General and Subject Certificate	NA	
Introductory Level A	Preparatory Programme	30	Less than 30
Introductory Level B	Pre-entry Basic Skills Course	30	Less than 30

Table 1: Minimum number of credits for 'Qualifications' and parameters for 'Awards'

Fig.1: p56, Ministry for Education and Employment & National Commission for Further and Higher Education Malta (2016). *Referencing Report, 4th Edition*. NCFHE.

Total number of Hours: 1500

Mode of attendance: Fully Face-to-Face Learning

Duration: 2 Years

Target audience for MCAST full-time courses is 16 to 65+

The official language of instruction at MCAST is English. All notes and textbooks are in English (except for language courses which will be in the respective language being instructed). International candidates will be requested to meet English language certification requirements for access to the course.

This course will be offered at

MCAST has four campuses as follows:

MCAST Main Campus

Triq Kordin, Paola, Malta

All courses except for the Institute for the Creative Arts, Centre of Agriculture, Aquatics and Animal Sciences are offered here.

Institute for the Creative Arts

Mosta Campus

Misraħ Ġhonoq Targa Gap,

Mosta

**Institute of Applied Sciences,
Centre of Agriculture, Aquatics and Animal Sciences,
Luqa Road, Qormi**

Gozo Campus

J.F. De Chambray Street

MCAST, Ġhajnsielem

Gozo

Teaching, Learning and Assessment

The programmes offered are vocational in nature and entail both theoretical lectures delivered in classes as well as practical elements that are delivered in laboratories, workshops, salons, simulators as the module requirements dictate.

Each module or unit entails a number of in person and/or online contact learning hours that are delivered by the lecturer or tutor directly (See also section 'Total Learning Hours').

Access to all resources is provided to all registered students. These include study resources in paper or electronic format through the Library and Resource Centre as well as tools, software, equipment and machinery that are provided by the respective institutes depending on the requirements of the course or module.

Students may however be required to provide consumable material for use during practical sessions and projects unless these are explicitly provided by the College.

All Units of study are assessed throughout the academic year through continuous assessment using a variety of assessment tools. Coursework tasks are exclusively based on the Learning Outcomes and Grading Criteria as prescribed in the course specification. The Learning Outcomes and Grading Criteria are communicated to the Student via the coursework documentation.

The method of assessment shall reflect the Level, credit points (ECTS) and the schedule of time-tabled/non-timetabled hours of learning of each study unit. A variety of assessment instruments, not solely Time Constrained Assignments/Exams, are used to gather and interpret evidence of Student competence toward pre-established grading criteria that are aligned to the learning outcomes of each unit of the programme of study.

Grading criteria are assessed through a number of tasks, each task being assigned a number of marks. The number of grading criteria is included in the respective Programme Specification.

The distribution of marks and assessment mode depends on the nature and objectives of the unit in question.

Coursework shall normally be completed during the semester in which the Unit is delivered.

Time-constrained assignments may be held between 8 am and 8 pm during the delivery period of a Unit, or at the end of the semester in which the Unit is completed. The dates are notified and published on the Institute notice boards or through other means of communication.

Certain circumstances (such as but not limited to the Covid 19 pandemic) may lead Institutes and Centres to hold teaching and assessment remotely (online) as per MCAST QA Policy and Standard for Online Teaching, Learning and Assessment (Doc 020) available via link <https://www.mcast.edu.mt/college-documents/>

The Programme Regulations referenced below apply. (DOC 003 available at: link <https://www.mcast.edu.mt/college-documents/>)

Total Learning Hours

The total learning hours required for each unit or module are determined as follows:

Credits (ECTS)	Indicative contact hours	Total Student workload (hrs)	Self-Learning and Assessment Hours
1	5 - 10 hrs	25 hrs	20-15 hrs*
2	10 - 20 hrs	50 hrs	40-30 hrs*
3	15 - 30 hrs	75 hrs	60-45 hrs*
4	20 - 40 hrs	100 hrs	80-60 hrs*
6	30 - 60 hrs	150 Hrs	120-90 hrs*
9	45 - 90 hrs	225 hrs	180-135 hrs*
12	60 - 120 hrs	300 hrs	240-180 hrs*

* The 'Self-Learning and Assessment Hours' amount to the difference between the contact hours and total student workload.

Grading system

All MCAST programmes adopt a learner centred approach through the focus on Learning Outcomes. The assessment of MCAST programmes is criterion-referenced and thus assessors are required to assess learners' evidence against a pre-determined set of Learning Outcomes and assessment criteria.

For a student to be deemed to have successfully passed a unit, a minimum of 50% (grade D) must be achieved. In case of part time programmes, the student must achieve a minimum of 45% to successfully pass the unit.

All units are individually graded as follows:

A* (90-100)

A (80-89)

B (70-79)

C (60-69)

D (50-59)

Unsatisfactory work is graded as 'U'.

Work-based learning units are graded on a Pass/Fail basis only.

Detailed information regarding the grading system may be found in the following document: DOC 003 available at: link <https://www.mcast.edu.mt/college-documents/>)

Intake Dates

- MCAST opens calls for application once a year between July and August of each year for prospective applicants residing in MALTA.
- Applications to full-time courses from international students not residing in MALTA are accepted between April and Mid-August.
- For exact dates re calls for applications please follow this link <https://www.mcast.edu.mt/online-applications-2/>

Course Fees

MCAST courses are free for Maltese and EU candidates. International candidates coming from outside the EU need to pay fees for the respective course. Course fees are set on a per-level and course duration basis. For access to course fee structure and payment methods please visit <https://www.mcast.edu.mt/fee-payments-for-non-eu-candidates/>.

Method of Application

Applications to full-time courses are received online via the College Management Information System. Candidates can log in using Maltese Electronic ID (eID) or European eIDAS (electronic identification and trust services) to access the system directly and create an account as the identity is verified electronically via these secure services.

Non-EU candidates need to request account creation through an online form by providing proof of identification and basic data. Once the identity is verified and the account is created the candidate may proceed with the online application according to the same instructions applicable to all other candidates.

Non-EU candidates require a study visa in order to travel to Malta and join the course applied for. For further information re study-visa please access <https://www.identitymalta.com/unit/central-visa-unit/>.

For access to instructions on how to apply online please visit <https://www.mcast.edu.mt/online-applications-2/>

Contact details for requesting further information about future learning opportunities:

Academic qualification leading to a Regulated Profession

Civil Aviation Directorate

Address: Malta Transport Centre, Triq Pantar, Ħal Lija, LJA 2021, Malta

Tel: +356 25555412

Email: civil.aviation@transport.gov.mt

MCAST Career Guidance

Tel: 2398 7135/6

Email: career.guidance@mcast.edu.mt

Current Approved Programme Structure

Unit Code	Unit Title	ECTS	Year	Semester
ETACT-303-2104	Electrical Fundamentals and Digital Techniques/Electronic Instrument Systems	3	1	1
ETACT-304-2105	Materials and Hardware	4	1	1
ETACT-304-2106	Maintenance Practices (Part A)	4	1	Year
ETACT-303-2101	Aviation Legislation	3	1	2
ETACT-304-2107	Basic Aerodynamics and Turbine Aeroplane Aerodynamics, Structure and Systems (Part A)	4	1	Year
ETACT-304-2111	Mathematics	4	1	Year
ETACT-304-2112	Physics	4	1	Year
CDKSK-304-1922	English	4	1	Year
ETACT-304-2108	Maintenance Practices (Part B)	4	2	Year
ETACT-305-2109	Basic Aerodynamics and Turbine Aeroplane Aerodynamics, Structure and Systems (Part B)	5	2	Year
ETACT-304-2110	Basic Aerodynamics and Turbine Aeroplane Aerodynamics, Structure and Systems (Part C)	4	2	2
ETACT-305-2102	Gas Turbine Engine & Propellor	5	2	Year
ETACT-304-2103	Human Factors	4	2	1
CDKSK-304-2108	Information Technology	4	2	Year
CDKSK-304-1923	Malti	4	2	Year
Total ECTS		60	/	/

ETACT-303-2104: Electrical Fundamentals and Digital Techniques/Electronic Instrument Systems

Unit level (MQF/EQF): 3

Credits: 3

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 75

Unit Description

In this unit the learner will become familiar with the fundamentals of electricity and aircraft electronic instrument systems. The unit exposes the student to the basic principles of electricity including the electron theory, static electricity and the relationship between voltage, current and resistance. The learner will also become aware of both DC and AC types of electrical power and will be expected to also understand the basic principles of the generation and storage of electrical energy typically employed in the aircraft industry.

The second part of the module covers electronic instrument systems incorporated in civil and commercial aircraft. Here cockpit configurations and layouts are analysed including the principle of operation of the main types of instruments typically found on such aircraft. The handling of such equipment together with the precautions necessary to be followed to mitigate the effects of electrostatic discharge on such equipment is also investigated.

This unit addresses the requirements of EASA Part-66 Module 3 (Electrical Fundamentals) and Module 5 (Digital Techniques/Electronic Instrument Systems) at Category A level.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Explain the basic principles of electricity and related terminology. Describe different methods of generation and storage of electricity.*
2. *Describe typical system arrangements and cockpit layouts of electronic instrument systems.*
3. *Analyse the basic components of a computer system and the proper handling of electrostatically sensitive devices.*

ETACT-304-2105: Materials and Hardware

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Unit Description

In this unit learners will become familiar with the characteristics and properties of Ferrous and Non-Ferrous materials as well as Composite and Non-metallic materials used in the construction of aircraft. The learners will also be introduced to various electrical tools and components used in electrical and electronic systems .

Learners will discover different electrical materials and components used. Reference is made to manuals related to electrical works. There is also an ample part dedicated to understanding the various codes used on wires, cables and electrical components. The learners gain knowledge in interpreting such codes. The learners shall also gain knowledge on the importance of inspection of electrical systems.

The unit exposes learners to the several types of corrosion and their causes and effects on materials typically used in the aircraft industry. Learners will become familiar with the typical defects that affect the performance of materials used in aircraft construction and are expected to understand the severity of such defects and material deterioration.

The second part of the module introduces learners to the hardware and components used on civil and commercial aircraft. These include the several types of fasteners used in the assembly of the aircraft structure and the installation of aircraft onboard systems. Learners will be exposed to the different pipes and unions as well as control cable systems and components used in aircraft systems. The learner will be introduced to the different types of bearings and transmission systems in use.

The unit requires a sound understanding of the underpinning knowledge and addresses the requirements of European Union Aviation Safety Agency (EASA) Part-66 module 6 (Materials and Hardware)

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Classify wiring standards, special tools and materials used on modern aircrafts.*
2. *Explain the properties and effects of corrosion on ferrous and non-ferrous materials.*
3. *Describe the properties and possible defects of composite, wooden and fabric materials.*
4. *Select appropriate fasteners for given aircraft applications.*
5. *Show the application of pipes, unions, control cables, bearings and transmissions.*

ETACT-304-2106: Maintenance Practices (Part A)

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

This unit has been designed to provide learners with the knowledge, skills and understanding needed to carry out a range of aircraft maintenance procedures in a safe, efficient and timely manner. In this unit, learners will be introduced to the potential hazards of working in workshops and on aircraft. Safety is vital during aircraft maintenance, to protect both individuals and the integrity of the aircraft. Therefore, this unit will cover the health and safety issues relating to all aspects of aircraft maintenance.

They are also introduced to the precautions that need to be taken and how to deal with an emergency. This unit exposes the learners to workshop practices and to the several types of tools and tool handling. Learners are then taught the fundamentals of engineering drawings and the different fits and clearances used in engineering. Many different machine tools, tools and equipment are used in an aviation workshop which have to be always well kept and properly stored. Learners will learn how to safely use these tools and equipment, and they will also understand the organisation and maintenance procedures as well as calibration standards.

Learners will also understand and practice basic concepts on how to communicate effectively and how to maintain good work relationships. This will give the learners the opportunity to work effectively as part of a team, since in an aviation workshop, teamwork is highly important. The unit requires a sound understanding of the underpinning knowledge whilst addressing the requirements of EASA Part-66 sub-modules 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, and 7.7 (part of Module 7 - Maintenance Practices) at Category A level.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Employ safety precautions and correct practices when working on aircraft and in workshops.*
2. *Use the appropriate tools for the fabrication of components in common aircraft materials, including marking out, sizing, squaring and punching tasks.*
3. *Manufacture and assemble components and parts in accordance to engineering drawings, diagrams and standards of fits and clearances used on aircraft.*
4. *Recognise the basic practices required to carry out aircraft wiring systems.*

ETACT-303-2101: Aviation Legislation

Unit level (MQF/EQF): 3

Credits: 3

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 75

Unit Description

To ensure a high level of Safety in Aviation in each Member State, the European Union sets up an Aviation Regulation Framework that is common for and applicable to every country that is a Member within the Union. This also includes Malta. This unit presents an overview of the Regulation Framework covering up the Area of Aircraft Continuing Airworthiness, which is mainly ensured by appropriate aircraft operation and maintenance.

The unit is designed to cover up the requirements for the approval, certification and licensing of Organisations and people involved in Aircraft Operations, Maintenance and Certification. This includes the Operator of an aircraft, the Maintenance Organisation that performs the maintenance on the aircraft, the Staff Certifying the Aircraft following maintenance and before the flight, as well as the Organisation approved to carry out the Management of the Maintenance of the aircraft. The role of the EU Member State is also covered up.

The unit is also designed to completely cover up the knowledge requirements of the European Aviation Safety Agency (EASA) Part-66 Module 10 - Aviation Legislation, at Category A Level.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Appraise the Aviation Regulation Framework applicable to the EU Member State.*
2. *Explain the requirements for the Maintenance Organisations and Certifying Staff to obtain and retain the necessary approval or authorization.*
3. *Describe the Technical Requirements and Administrative Procedures related to Aircraft Air Operations.*
4. *Discuss Aircraft Continuing Airworthiness Requirements according to standards set up by the European Union, and any other standard set up at International and National Level.*

ETACT-304-2107: Basic Aerodynamics and Turbine Aeroplane Aerodynamics, Structure and Systems (Part A)

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Unit Description

Large modern passenger aircraft, by themselves, can weigh tens of thousands of kilograms. In addition, they carry large loads in the form of fuel, passengers and cargo. This unit delves into the theory on how lift augmentation is achieved upon an aircraft in order to overcome such huge loads and be able to get into flight. In addition to the weight, an aircraft also has to overcome drag. During this unit, the learner will understand the basic principles on how drag is overcome during the flight.

Upon delivering the basics of flight theory, the learner will understand the effects of flying at different speeds on flight augmentation, as well as on the aircraft aerodynamics. The provisions taken to achieve subsonic and supersonic speeds are also examined.

The module also presents the learner with the concepts of the aircraft airframe structure, with particular emphasis on the aeroplane. The learner will also appreciate the importance of structural strength. An overview of the main airworthiness requirements to be met during the design and manufacturing of an aircraft in order to achieve proper structural strength to ensure a safe flight is delivered. Other elements related to safety presented in this unit are: structural classification; strain and fatigue elements and the provisions taken to prevent corrosion and safe operation of the structure in case of a lightning strike.

The main sections related and attached to the fuselage of an aeroplane will be studied such as: wings; flight control surfaces; engines; landing gears; doors and windows. Construction provisions to ensure structural integrity in case of abnormal flight conditions is also discussed.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Explain the basic means by which lift and drag are generated during the flight of an aircraft.*
2. *Examine the effects of aerodynamics over aeroplanes flying at different air-speeds.*
3. *Describe the general concepts of the structure forming the airframe of an aircraft.*
4. *Outline the function of the main sections that constitute the airframe structure of an aeroplane.*

ETACT-304-2111: Mathematics

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Unit Description

This unit has been designed to fulfil the requirements for EASA Part-66 CAT A Module 1 which consists of basic level of mathematics. Furthermore, it acts as an essential basis for the successful completion of other units within the programme of study.

Initially, the learner will become familiar with basic rules governing numbers and then proceed to apply the learnt principles in decimal numbers, fractions, indices, conversions, percentages and averages, and ratios and proportions.

This will lead the learner to be able to understand and apply simple algebraic techniques to manipulate expressions and mentally solve algebraic equations commonly found in the aviation context.

Eventually, the learner will be introduced to graphical techniques. This will enable the learner to understand the application of the Cartesian coordinate system, plot linear and quadratic equations, determine the equation of a straight line from a graph, and graphically, solve simultaneously two equations.

Finally, the learner will be presented material related to mensuration. The knowledge transmitted to the learner will enable him/her to be able to construct and determine the area and volume of simple and compound geometrical figures.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Apply the correct arithmetic process following the understanding of the correct use of numbers.*
2. *Apply basic algebraic techniques to manipulate expressions.*
3. *Use simple graphical techniques to solve problems.*
4. *Apply geometrical properties of shapes and solids to find areas and volumes.*

ETACT-304-2112: Physics

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Unit Description

This module has been designed to fulfil requirements for EASA Part-66 Module 2 CAT A which covers matter, mechanics and thermodynamics.

A clear understanding of matter will set the foundation by enhancing the learner's knowledge with regards to the nature of different materials along with physical and chemical properties. The learner will be competent to distinguish between the different states of matter.

The learner will also be introduced to mechanics. In relation to aviation, mechanics is constructed of the following divisions: statics, kinetics, dynamics and fluid dynamics. Through statics, the learner will analyse loads acting on physical system which are in static equilibrium and hence do not experience acceleration. When dealing with kinetics, the learner will study the relationship between motion (both linear and rotational) and its causes, namely forces and torques. Dynamics deals with the effect that forces have on motion while fluid dynamics focuses on the flow of fluids, liquids and gases, including aerodynamics and hydrodynamics.

Through thermodynamics, the learner will be made familiar with different temperature scales and understand the definition of heat

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Distinguish between materials according to their physical and chemical properties.*
2. *Explain statics in mechanics according to an aviation set up.*
3. *Apply the theory of linear and rotational kinetics to aviation systems.*
4. *Apply the dynamics and fluid dynamics principles on an aviation set up.*
5. *Discuss thermodynamic principles in an aviation context.*

ETACT-304-2108: Maintenance Practices (Part B)

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Unit Description

In this unit, learners will further familiarise themselves with the requirements and fundamentals of working in the aviation maintenance sector. The learners will practice further health and safety requirements, personal protective equipment usage and the need to apply safe working practices. With the practical skills and knowledge acquired in this unit, learners will be able to work safely on basic tasks, whilst taking the necessary precautions during the working process.

In this unit, learners will also become familiar with different tools used in an aviation workshop. Learners will practice aircraft riveting and riveting techniques. They will also be introduced to an array of fasteners and fastening techniques commonly used in aircraft assemblies.

Learners will understand basic concepts in relation to communication and maintaining work relationships. Therefore, learners will be able to work effectively as part of a team since in an aviation workshop this is very important due to some tasks needing the collaboration of a team to be accomplished.

The learners are also introduced to the different aircraft systems and how these are inspected and maintained. The aircraft systems covered are pipes and hoses, transmissions and control cables together with the associated bearings and springs. Towards the end of the unit, the learners will learn how to properly handle an aircraft especially during maintenance and the techniques used in the disassembly, inspection, repair and assembly of aircraft systems and structures and the associated maintenance procedures. Learners are also introduced to the potential abnormal events an aircraft can experience and what checks are carried out in such an eventuality.

The unit requires a sound understanding of the underpinning knowledge and addresses the requirements of EASA Part-66 sub-modules 7.8, 7.9, 7.10, 7.11, 7.12, 7.13, 7.17, 7.18, 7.19, and 7.20 (part of Module 7 - Maintenance Practices) at Category A level.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Prepare aircraft sheet metal for riveting and rivet prepared parts accurately according to documentation provided.*
2. *Outline the importance of pipes and hoses, springs and bearings in aircraft applications.*
3. *Outline the importance of transmission and control cable systems in aircraft applications.*
4. *Carry out procedures for handling, maintenance and storage of aircraft that also include preparation of aircraft parts and inspection after abnormal events.*

ETACT-305-2109: Basic Aerodynamics and Turbine Aeroplane Aerodynamics, Structure and Systems (Part B)

Unit level (MQF/EQF): 3

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 125

Unit Description

To be able to fly an aircraft, both mechanical and electrical systems are required so that the necessary control is achieved, as well as so that the different systems within the aircraft can operate correctly and safely. This unit focuses mainly on the mechanical aspects of the different aircraft systems.

A system that is very important and essential on large aircraft, in order to achieve the control of operations of systems like flight controls and landing gear, is the hydraulic system. The first part of this unit focuses on systems essential for the control of a large aircrafts. This part of unit covers the principles of hydraulic transmission to such aircraft systems and their associated components. Particularly principles associated with hydraulic power actuation and the application in modern hydraulic systems. Including typical provisions taken during emergency and abnormal conditions.

The unit presents the purpose, construction and operation of typical aircraft landing gear systems, including system arrangement for extension and retraction of the landing gear, nose wheel steering, as well as braking. Also includes system operation during abnormal events. The second main system usually related directly to the hydraulic system, is the flight control system of an aircraft. Large aircraft flight controls are subject to heavy loads that makes it impossible to move a flight control manually during flight. Hence, most large aircraft employ hydraulic power to achieve such control. The unit covers also typical flight control systems as found on different aircraft types.

Apart from these three main systems for aircraft control, this unit covers other aircraft systems that are vital for large passenger aircrafts; like the system related to air, as well as pressurisation. The air systems covered include pneumatic supply, air-conditioning and aircraft pressurization. With the latter 2 being essential on passenger aircraft flying at high altitudes, due to not enough oxygen present in the atmosphere and the extremely low ambient temperatures.

Another essential aircraft system is the fuel system. The unit covers typical fuel systems found on aircrafts and explains typical system layouts and operation principles; including methods of fuel supply, transferring, venting and draining. Also covers

important safety requirement that must be followed during aircraft refueling and defueling and other safety requirements that must be observed prior fuel tank entering. The final part of the unit deals with the passenger cabin and cargo compartments, and related systems like oxygen and water/waste. Typical system layouts, as well as safety requirements are presented. Including typical cabin layouts and installations, cargo handling and retention equipment, oxygen supply systems (crew/passenger), and water and waste systems. It also demonstrates typical servicing practices performed regularly during aircraft operation on oxygen and water/waste systems.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Describe the modern aircrafts' hydraulic system, flight control systems, landing gear systems and associated components.*
2. *Explain the function and operation of a typical aircraft fuel system.*
3. *Recognise the function and purpose of an aircraft air-conditioning and pressurisation system.*
4. *Outline the construction, purpose and operation of aircraft cabin equipment, oxygen and water/waste systems and associated components.*

ETACT-304-2110: Basic Aerodynamics and Turbine Aeroplane Aerodynamics, Structure and Systems (Part C)

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Unit Description

As technology improves, the blend between mechanical and electrical systems is becoming more evident. This effect is happening in the simplest machines to the more complex system. This phenomena is highly noted in the aviation sector where old mechanical systems are eventually supported by electrical and avionics systems. This blend of mechanical and electrical/electronics is intended to ensure a safer method of transport in aviation.

The intention of this unit is to expose the learner to different aircraft systems that are highly linked with electricity and avionics. The learner is offered the possibility to learn about the production and distribution of electrical power, aircraft flight instrument systems, communication systems that includes voice over radio and radio navigation systems and aircraft modular systems.

The learner is also exposed to other avionic systems like on board maintenance systems, cabin electrical and electronic systems that includes in-flight entertainment and communication systems, and aircraft data information systems. Besides the avionics and electrical systems, the unit offers an overview of the aircraft's, light system, fire protection system and ice and rain protection system.

Learning Outcomes

On completion of this unit the learner will be able to:

- 1. Describe Aircraft Electrical Power, lighting, fire protection and ice and rain systems.*
- 2. Discuss the purpose, function, operation and position of Aircraft Indicating and Instrument Systems.*
- 3. Explain the function, operation and layout of various communication methods including voice and radio navigation systems*
- 4. Describe the basic requirements for on board maintenance systems, integrated modular avionics systems, cabin systems and information systems.*

ETACT-305-2102: Gas Turbine Engine & Propellor

Unit level (MQF/EQF): 3

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 125

Unit Description

Engine power has to be converted into thrust. On some aircraft the propeller is used to create such thrust. This part of unit aims to give learners a detailed understanding of aircraft propellers. Propellers, being aerofoil shaped, produce lift to pull the aircraft forward through aerodynamic action. Through this part of unit the learner will obtain a detailed understanding of the above, as well as propeller blade construction theory and operation.

This part of unit also covers the progression from fixed pitch propellers to controllable pitch to constant speed propellers. Knowledge about the procedures required to protect, maintain, store and preserve propellers in compliance with laid down standards will also be acquired.

This part of the unit covers the syllabus required by a person to sit for the European Aviation Safety Agency (EASA) Part 66 examination in Category A Module 17A Propellers. The other part of the unit explains the most essential fundamentals that are necessary to understand the principles of gas turbine engines. Students will become familiar with the terms most commonly used. It also gives an understanding of how thrust is produced.

The gas turbine engine is an internal combustion engine which burns a lean mixture of fuel with compressed air. The pressurized combustion gases expand through the turbine resulting in thrust. This part of unit introduces the engine construction, operation and maintenance. The students are encouraged to become familiar with lubrication, cooling, starting, ignition, ice and fire protection systems. Phenomena such as choke, stall and surge are presented in addition to instruments used to monitor engine performance. Turbine engine hydraulics, fuel and oil systems, as well as the generation of electrical power are also covered.

The knowledge required by a person to sit for the European Aviation Safety Agency (EASA) CAT A Part 66 Exam Module 15 - Gas Turbine Engines is covered.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Describe the theoretical fundamentals of propeller construction and pitch control.*
2. *Discuss the methods of ice protection, maintenance, storage and protection of propeller blades.*
3. *Explain the theoretical fundamentals of the gas turbine engine.*
4. *Describe the gas turbine engine construction.*
5. *Analyse the different systems used in a gas turbine engine including controls and instrumentation.*
6. *Describe the performance of gas turbine engines and their maintenance.*

ETACT-304-2103: Human Factors

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Unit Description

The study of Human Factors is about understanding human behaviour and performance. When applied to Aviation Maintenance, Human Factors knowledge is used to optimize the fit between people and the systems in which they work in order to improve safety and performance.

An understanding of the importance of human factors to aircraft maintenance engineering is essential to anyone considering a career as an aircraft maintenance unlicensed or licensed mechanic or technician. Human factors impinge on everything a person involved in aviation maintenance does in the course of his/her job in one way or another, from communicating effectively with colleagues to ensuring they have adequate lighting to carry out their tasks. Knowledge of this subject has a significant impact on the safety standards expected in aircraft maintenance.

This unit covers essential aspects of human factors as related to aviation maintenance such as, human performance and limitations as applied to aviation maintenance, as well as elements of social psychology and factors affecting performance of a person involved in aviation maintenance. The physical environment found in aircraft maintenance, and the tasks involved during aviation maintenance are also tackled. The importance of communication and its contribution to avoid human error are also covered.

The unit requires a sound understanding of the underpinning knowledge and addresses the requirements of EASA Part-66 module 9 (Human Factors) at Category A level.

Learning Outcomes

On completion of this unit the learner will be able to:

1. *Describe the effect of physiological and psychological factors that could affect and limit human performance.*
2. *Discuss the type of aviation maintenance tasks and the proper physical environment for aircraft maintenance.*
3. *Explain the importance of good communication between persons during aviation maintenance work.*
4. *Identify human errors and hazards in the workplace.*

CDKSK-304-1922: English

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Unit Description

This unit is targeted at learners proceeding from a Level 2 vocational programme (therefore taking into account completion of Level 2 Key Skills English) as well as those whose entry level is directly at Level 3.

In line with the Malta Qualifications Framework for Level Descriptors, English for Diploma Programmes takes into account the learning of English in terms of knowledge, skills and competences. Knowledge seeks to assess recognition of facts, principles and general concepts in a field of work or study, while skills assess the application of that knowledge in the accomplishment of tasks by employing basic methods, materials and information. In turn, competences empower the learner by giving him/her full responsibility for their accomplishment.

At Level 3, learners are expected to have sufficient knowledge of English in order to deal with everyday situations in scenarios ranging from home, work, social and public settings. General emphasis is laid on work and public settings. In their application of this knowledge, learners are required to listen to or read a range of short texts of a technical and non-technical nature, as well as information broadcast through the popular media. General understanding as well as association of ideas and inference of meaning are expected at this level. Learners should be capable of communicating in English by discussing familiar topics or vocational topics previously exposed to.

This unit encourages learners to combine their technical knowledge with their growing knowledge of general English. They will be introduced to specialised vocabulary related to their area of vocational interest: to materials and their properties, equipment and its usage, processes, tools, devices, customer service and item servicing and general workshop/laboratory practice. In addition, learners are expected to be able to write and produce short but effective work-related memoranda, personal letters, letters of application and curriculum vitae. Writing practice will be contextualised according to the various exigencies of the various institutes.

Learning Outcomes

Upon completion of this unit the student will be able to:

1. *Listen to and understand information obtained from a media source.*
2. *Identify and comprehend information presented textually in vocational and technical contexts.*
3. *Identify, comprehend, and interpret information presented visually.*
4. *Speak and communicate ideas effectively on a range of topics ranging from the personal to the technical/vocational.*
5. *Write short, work-related correspondence in the form of memoranda, letter of application and curriculum vitae.*
6. *Research and organise information for extended technical/vocational writing.*

CDKSK-304-1923: Malti

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Daħla

L-ilsien huwa essenzjali fl-iżvilupp intellettuali, emozzjonali u soċjali ta' kull individwu. Il- Malti mhux biss jiġbor fih identità lingwistika u kulturali iżda huwa għodda ta' komunikazzjoni u interazzjoni. Permezz ta' l-ilsien Malti l-individwu jista' jesprimi dak kollu li jhoss u jkun kreattiv fil-messaġġ li jrid iwassal filwaqt li jkun espost għal oqsma oħra ta' taġħlim. Il-Malti huwa lsien ħaj li ssawwar mill-poplu Malti u għadu qiegħed jissawwar biex jibqa' għodda ta' kreattività għal kull min jużah.

L-Għanijiet

Biex l-istudenti jiksbu din l-unità jridu juru li kapaci:

1. *Jifhmu diskors standard li wieħed juża u jiltaqa' miegħu fil-ħajja ta' kuljum, kif ukoll jifhmu suġġetti marbuta ma' grajjiet kurrenti u suġġetti personali u ta' interess professjonali u vokazzjonali*
2. *Jifhmu testi li jikkonsistu f'diskors użat fil-ħajja ta' kuljum u fid-dinja tax-xogħol filwaqt li jifhmu deskrizzjoni ta' avvenimenti, fehmiel u opinjonijiet permezz tal-qari.*
3. *Jaffrontaw sitwazzjonijiet f'kuntast ta' konverżazzjoni u jikkellmu fuq suġġetti li huma familjari jew ta' interess personali kif ukoll marbuta mad-dinja ta' kuljum u l-qasam tax- xogħol.*
4. *Jiformolaw testi fuq suġġetti li huma familjari għalih u ta' interess personali u vokazzjonali b'mod preċiż u relevanti f'dak li għandu x'jaqsam mal-lingwa Maltija.*
5. *Jħaddmu ħiliet varji għal skop ta' taġħlim, li jmorru lil hinn mil-lingwa.*

CDKSK-304-2108: Information Technology

Unit level (MQF/EQF): 3

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Unit Description

This unit aims to develop basic computer knowledge and skills needed in real-life situations. In a supportive environment, the learner will be challenged to understand how to use various real-life applications belonging to a productivity suite with the aim of providing to our learners the necessary skills required to use common computer applications necessary during their studies. By the time learners complete this unit they will be increasingly independent users of personal computers and will have a broad understanding of how ICT can help their learning, their work, and their social life. They will have a well-developed ability to decide when and how to use ICT and will be aware of the limitations associated with this use.

Through this unit the learners will achieve a broad knowledge of ICT and will be able to use ICT to carry out several increasingly complex tasks. They will be competent in using word processing, spreadsheet, and presentation software to create, format and finish documents, workbooks and slide shows that contains various elements. Finally, this unit also introduces the use of online communities and online tools to build and maintain an online presence.

Learning Outcomes

On completion of this unit a learner will be able to:

1. *Use a word processing application to create everyday letters and documents.*
2. *Use a spreadsheet to produce accurate work outputs.*
3. *Use presentation software.*
4. *Utilise online collaboration tools.*
5. *Use internet presence management tools.*