MCAST

Malta College of Arts, Science & Technology

MQF Level 3

Diploma in Aircraft Structures & Repairs
Course Specification

ME3-A4-19

Course Description

This MCAST Diploma is intended to train the student for competences in Aircraft Structures and Repairs which are essential for structure repair mechanics. This training course will include Basic Aircraft Sheet Metal, Structures Repair Procedures and Human Factors, amongst other modules.

The course is on a full-time basis and will take 12 months to be completed. It is divided into three main areas: namely the theoretical element, the practical experience and on-the-job exposure.

This is an opportunity for individuals to commence or develop their career in the aviation industry.

Programme Learning Outcomes

At the end of the programme the students are able to

1. *Outline the safety procedures required when conducting repairs.*
2. *Interpret source documents to be able to perform a repair successfully.*
3. *Use appropriate materials for a given specific application.*
4. *Follow the appropriate repair procedure guidelines and techniques.*

Entry Requirements

- MCAST Foundation Certificate; or
- 2 SEC/O-Level/SSC&P (Level 3) passes from Mathematics, Physics and Graphical Communication / Technical Drawing / Design and Technology
- Candidates already in possession of passes in Part-66 Aircraft Mechanic Category A modules will also be considered.

Other Entry Requirements

N/A

Current Approved Programme Structure

Unit Title	ECVET
Fundamentals of Aircraft Hardware and Repair Parts	6
Aircraft Structure, Construction and Integrity	6
The Documentation and Structure Repair Manual	6
On the Job Experience	12
Workshop Practices Fundamentals	6
Mathematics	4
English	4
Malti	4
Information Technology	4
Human Factors	4
Science Adapted for Assistant Aviation Technicians	4
Total ECVET	60

Unit: Workshop Practices Fundamentals

Unit level (MQF): 3

Credits: 6

Unit Description

In this unit learners will become familiar with the requirements and fundamentals of working in an aviation maintenance sector. Therefore, it is of upmost importance that learners become familiar with the health and safety requirements, personal protective equipment and the need to apply safe working practices. With the skills and knowledge acquired in this unit, learners will be able to work safely on basic repair tasks, whilst applying precautions in the working process.

Learners will also become aware of hazards involved in airport operational areas, concerning: electricity, gases, oils and chemicals, fire, safety clearance areas when aircraft systems are in operation. Therefore, learners will be able to identify such hazards and avoid accidents. Learners will also be able to identify emergency exits, follow evacuation plans and firefighting procedures.

In this unit learners will also become familiar with different tools used in an aviation workshop. Learners will also understand the organization and maintenance procedures as well as calibration standards. In addition, they will be able to interpret results from calibration of tools and equipment and apply the corrective action where appropriate.

Learners will also understand basic concepts with 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 since some tasks need the collaboration of a team to be accomplished.

Learning Outcomes

Upon completing the unit, learners should be able to:

1. *Apply safe working practices in basic aviation maintenance sectors.*
2. *Identify the correct measuring instruments when fabricating parts foraircraft structure repairs.*
3. *Use appropriate tools and equipment in an aviation maintenance facility.*
4. *Understand the importance of maintaining standards of workmanship.*

Unit: On the Job Experience

Unit level (MQF): 3

Credits: 12

Unit Description

In this unit learners will be spending 6 months carrying out all the knowledge, skills and competences obtained in previous units. Learners will be given a good taster of what it is like to go in the world of work rather than carrying out the tasks in a controlled environment such as the institutes workshop and classroom.

Learners will apply all they have learnt in a realistic setting, using all the competences achieved. Learners therefore will be identifying the factors related to safety, work conditions and human element in an aircraft maintenance environment as instructed. Learners will also familiarise themselves with the element of work ethics, first hand as well as understand the policies, rules and regulations of the organisations hosting them. Learners will carry out tasks related to the selection of suitable parts, hardware and resources to accomplish given basic task on an aircraft or tasks within the limit of their authorisation.

Learners will accomplish tasks as per instructions and approved documentation. Learners will get the opportunity to practice their specialisation within the concept of Regulations and Continuing Airworthiness Requirements.

Learning Outcomes

Upon completing the unit, learners should be able to:

1. *Identify the factors related to safety, work conditions and human element in an aircraft maintenance environment.*
2. *Select the suitable parts, hardware and resources to accomplish a given task on an aircraft.*
3. *Carry out specific given tasks as per instructions and approved documentation.*
4. *Practice own specialisation within the concept of Regulations and Continuing Airworthiness Requirements.*

Unit: The Documentation and Structure Repair Manual (SRM)

Unit level (MQF): 3

Credits: 6

Unit Description

In this unit, the learners will familiarise themselves with the documentation and structure repair manual, known in short as SRM. The SRM is the bible of repairs on aircrafts and it is emphasised to learners to always consult the manual when given the task of a repair. The SRM contains a corrective logical sequence that one must follow for particular repairs, the identification of the required components, applicable allowable damage, damage evaluation and finally the applicable repair schemes.
The learners will familiarise themselves with the different classification of damage to than be able to assess the damage by understanding the graphical representations and repair guidelines as well as any additional requirements called up in the repair scheme.

Therefore, in this course learners will therefore familiarise with repair rules and guidelines as well as be able to understand and interpret repair Illustrations and thus accomplish a repair task by following instructions. At the end of this unit, learners will be able to accomplish corrective procedure as per SRM on aircraft mock ups.

Learning Outcomes

Upon completing the unit, learners should be able to:

1. *Understand the terminology, layout and information relating to aircraft hardware and repair parts in the structure repair manual.*
2. *Use the Structure Repair Manual correctly when conducting Inspections and establishing damage criteria and repairs.*
3. *Interpret the Structure Repair Manual information and instructions to assess the damage and identify the repair procedures and techniques.*
4. *Follow the procedure and techniques as illustrated and instructed in the structure repair manual to repair an identified damage.*

Unit: Aircraft Structure, Construction and Integrity

Unit level (MQF): 3

Credits: 6

Unit Description

In this unit learners will become familiar with different aircraft structures their construction and integrity.

Learners will become familiar with structure elements such as skin panels, frames, stringers and others in the aircraft airframe. In addition, learners will also know the components, zones and locations on an aircraft. Therefore, learners will be able to classify structural element as primary load elements or secondary load elements.

The above will enable learners to understand the importance of structure integrity in an aircraft, and how inspections for aircraft integrity can prevent extensive damage on the airframe. Therefore, learners will become familiar with various inspection methods including Non-Destructive Testing that are used in aircraft integrity inspections.

In this unit the learners will also become familiar with the different types of corrosion on an aircraft and the typical corrosion processes. This will enable the learner to understand the method involved in the prevention of corrosion.

On completion of this unit the learner will be able to identify corrosion, damages and flaws and will be able to describe the damage and deterioration. This will enable learners to communicate and report damage identified on the aircraft.

Learning Outcomes

Upon completing the unit, learners should be able to:

1. *Determine the type of corrosion found on an aircraft structure and components.*
2. *Describe effectively using the appropriate jargon the characteristic of the corrosion or deterioration identified on a structure or component.*
3. *Select the suitable inspection technique/s to identify and assess damage on the aircraft.*
4. *Identify preventive measures and methods applied to control and prevent corrosion on the aircraft structure and components.*

Unit: Fundamentals of Aircraft Hardware and Repair Parts

Unit level (MQF): 3

Credits: 6

Unit Description

In this unit learners will familiarise themselves with the simple terms and terminology related to different types of metal, materials and heat treatments commonly used in an aviation maintenance set up. Learners also need to be familiar with the basic element and properties of the above. In addition to this they need to be able to read and interpret the designation codes and identifications of various metals and heat treatment. This will enable learners to classify metals, materials and heat treatments according to their characteristics.

In this unit learners will gain the knowledge required on fasteners and related terminology used in aviation. Learners need to understand the storage requirements of materials used in aviation. In this unit learners will also increase their knowledge gained in the previous unit to a higher level interpretation of Aircraft Engineering Drawings.

In addition to this, learners will become familiar with the techniques and properties required to apply and use sealants. The learner will also be given the required skill and techniques required to bend and form sheet-metal, according to required calculations.

Using the above knowledge learners will fabricate the repair parts, using hole transfer techniques, bending, forming, riveting and fastener installation. Learner will use Manufacturer's guidelines and basic codes in the accomplishment of the above.

Learning Outcomes

Upon completing the unit, learners should be able to:

1. *Use the correct terminology when refering to Aircraft Hardware and Repair Parts.*
2. *Know the properties and characteristics and designation of Aircraft Hardware and Repair Parts.*
3. *Interpret Aircraft Engineering Drawings in the fabrication of repair Parts.*
4. *Fabricate aviation repair parts using acquired techniques.*