



# MCAST

Malta College of Arts, Science & Technology

MQF Level 3

CE3-A5-19

**Diploma in Masonry Heritage Skills**

**Course Specification**

## **Course Description**

This vocational course gives the student the opportunity to take stone restoration as a career. It provides both practical and theoretical skills to enable participation in limited interventions in stone restoration. Successful students can progress to the next higher level course in restoration, the MCAST Advanced Diploma in Masonry Heritage Skills (Mastru). Throughout the programme students will have the opportunity to obtain necessary maintenance, protection and preservation skills, understand preparation and recording techniques, and apply cleaning and testing procedures.

The programme is complemented with other essential units such as Safety at Work, Technical Reporting, IT and Applied Mathematics.

## **Programme Learning Outcomes**

At the end of the programme the students is able to

- 1. Carry out a risk assessment of the surrounding working environment before and after executing an assigned task;*
- 2. Use basic tools on surfaces to stabilize, preserve and restore historic buildings;*
- 3. Interpret written specifications/drawings and evaluation reports for work on historic structures;*
- 4. Identify and apply the main types of materials in use.*

## **Entry Requirements**

- MCAST Foundation Certificate ;or
- 2 SEC/O-Level/SSC&P (Level 3) passes  
Compulsory: Mathematics
- A full “Secondary School Certificate and Profile” (SSC&P) at Level 2 will be accepted in lieu of one (1) O-Level pass.

## **Other Entry Requirements**

N/A

## Current Approved Programme Structure

<b>Unit Code</b>	<b>Unit Title</b>	<b>ECVET</b>
ETBSV-306-1501	Stereotomy, Stone Dressing and Building Quantities	6
ETBSV-306-1502	The use of Limes, Mortars and Limestone	6
ETCVN-306-1501	Historic Buildings, Restoration and Conservation Technology	6
ETCVN-306-1502	Documentation and Recording Techniques	6
ETCVN-306-1503	Deterioration Mechanisms, Cleaning, Maintenance and Protection Techniques	6
ETH&S-306-1501	Occupational Health and Safety in the Construction Industry	6
CDKSK-304-1921	Mathematics	4
CDKSK-304-1922	English	4
CDKSK-304-1923	Maltese	4
CDKSK-304-1924	Information Technology	4
CDKSK-304-1913	Individual and Social Responsibility	4
CDKSK-304-1925	Science	4
<b>Total ECVET/ECTS</b>		<b>60</b>

## **Unit: ETBSV-306-1501- Stereotomy, Stone Dressing and Building Quantities**

**Unit level (MQF): 3**

**Credits: 6**

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### **Unit Description**

This unit provides learners with specific geometrical knowledge of drawing and the techniques of cutting stone blocks named stereotomy. At the base of stereotomy knowledge learners will develop skills of stone blocks transforming and assemble them into curved stable structures. Learners will also gain the knowledge of measuring methods and instruments, and develop the skills on estimating the price of the construction.

Stereotomy represents the art of making sections out of solids. It is a craft of cutting and dressing complicated blocks of masonry (such as those for an arch, vault, or spiral staircase). In other words, it comprises geometrical knowledge of drawing and the techniques of cutting the stone blocks and shaping them into curved stable structures. Learners are introduced to stone dressing techniques and technology with practical, hands-on exercises to experience handling of local limestone blocks and tools. The unit also explores the geometry and the techniques involved in drafting full-size arches and elements of vaults.

Locally used techniques for the measurement and costing of building construction work are explored within the unit. Common hand-held manual and digital measuring equipment are used to facilitate work at the construction sites. Learners are also instructed to make use of IT to compile data and computations.

### **Learning Outcomes**

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

- 1. Perform stone dressing techniques in sequence with various stone dressing operations;*
- 2. Operate various types of stone dressing tools;*
- 3. Perform the setting out of a range of construction types in-situ;*
- 4. Compare construction details of historic and contemporary buildings;*
- 5. Evaluate structural interventions that could be applied to historical and modern buildings.*

## **Unit: ETBSV-306-1502 - The use of Limes, Mortars and Limestone**

**Unit level (MQF): 3**

**Credits: 6**

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### **Unit Description**

This unit enables learners to use hand tools, power tools, materials and personal protective equipment (PPE) appropriate for the use of limes and mortars and it provides them with the skills needed to identify, mark and repair damaged parts of the structure.

Learners will be able to explore more about the mortar reconstruction processes and the concept of structural consolidation. This unit will equip learners with basic practical skills needed in the repair interventions. They will have the opportunity to use various hand and power tools. A number of practical exercises will allow learners to assemble and finish repair tasks on simple elements in the workshop.

Learners will be qualified to deal professionally with limes and mortars techniques used in the areas of architectural heritage.

### **Learning Outcomes**

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

- 1. Discuss the types of limestone (particularly in the local environment);*
- 2. Identify and explain quarrying techniques;*
- 3. Identify local sorts of rocks and stone primarily used in architecture;*
- 4. Demonstrate plaster repair and structural reconstruction processes.*

## **Unit: ETCVN-306-1501- Historic Buildings, Restoration and Conservation Technology**

**Unit level (MQF): 3**

**Credits: 6**

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### **Unit Description**

This unit introduces learners to the history of architecture with a direct relation to construction developments. The lectures will include architectural developments in various parts of the world and their influence upon Malta's local culture. The learners will gain theoretical knowledge and information related to technology used in restoration and conservation, legal documents, architectural history, and heritage concepts and techniques (contemporary and traditional). Also, it will be described what heritage conservation is, and reasons why we should conserve historic buildings.

Conservation and restoration technology involves a multidisciplinary team where craftsmen have a specific role. Learners will hugely enlarge their knowledge once they are encountered with real life relations between the investor, law, architect and craftsmen. These experts will demonstrate their skills in particular areas that are vital for learners' skill improvement. This unit is also a solid base for further professions, particularly craftsmen that specialise in specific jobs in the field of restoration and conservation technology.

### **Learning Outcomes**

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

- 1. Discuss the heritage conservation of historic buildings;*
- 2. Describe the structural elements and forms commonly found in historic buildings;*
- 3. Explain and demonstrate restoration and conservation techniques;*
- 4. Identify and describe the tools and equipment in the restoration and conservation interventions;*
- 5. Prepare a plan on the methodology and technology used in restoration and conservation of specific projects.*

## **Unit: ETCVN-306-1502 - Documentation and Recording Techniques**

**Unit level (MQF): 3**

**Credits: 6**

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### **Unit Description**

This unit allows learners to obtain the knowledge and essential practical skills associated with the documentation and recording techniques. Learners will be able to extract, document and assesses important information to plan the process of conservation and restoration.

Learners will learn about the importance of formatted documentation in order to record accurately the restoration and conservation interventions, as well as to perform condition assessment following documentation principles in order to create complete conservation logbooks.

Learners will also acquire skills in the application of technical drawings and freehand sketches made for parts of the structure that are being restored, as well as for the application of photography in conservation. They will be able to communicate about various tasks, using data from notes and sketches.

This unit presents opportunities for learners to connect with other visual techniques (photography, CAD or freehand drawing, etc.) and various areas of knowledge.

### **Learning Outcomes**

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

- 1. Define the importance and methods of documenting cultural heritage in general;*
- 2. Perform condition assessment in accordance with specific characteristics of buildings and monuments by using agreed terminology and proper documentation approach;*
- 3. Produce accurate visual records (technical drawings, freehand sketches and photography) in accordance with written data and conservation requirements and standards;*
- 4. Prepare a logbook containing all relevant drawings and notes organised according to set specifications;*
- 5. Communicate about various tasks related to practical heritage interventions (based on notes, descriptions and related sketches).*

## **Unit: ETCVN-306-1503 - Deterioration Mechanisms, Cleaning, Maintenance and Protection Techniques**

**Unit level (MQF): 3**

**Credits: 6**

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### **Unit Description**

The aim of this unit is to give learners the opportunity to develop an understanding of different interventions, such as deterioration mechanisms, as well cleaning techniques and protection and maintenance skills. This unit is designed to provide knowledge and skills in the aforementioned topics through a combination of theory, demonstrative practice and on-site work experience.

Learners will be presented with different mechanisms of deterioration (mechanical, physical, chemical and biological). This unit underlines the importance of identifying the causes, and possible solutions prior to appropriate interventions.

In addition, the unit explores the importance of maintenance and protection of heritage buildings and monuments in order to reduce and eliminate the need for restoration. Learners will first learn to evaluate the underlying material (lime washes, patina, etc.) and then they have hands-on practice on sample stones. This way they are provided with necessary skills that help them handle tools and be aware of the prevention of eventual further damage.

This unit gives learners the ability to understand the deterioration mechanisms and to be familiar with the maintenance and protection techniques of the structures. The unit also explores in depth methods of cleaning interventions. Learners will be enabled to go through practical interventions in cleaning techniques.

### **Learning Outcomes**

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

- 1. Recognise conservation terminology by distinguishing between maintenance, conservation and restoration;*
- 2. Understand the nature of deterioration mechanisms by distinguishing various effects on different materials;*
- 3. Evaluate protection and maintenance procedures;*
- 4. Choose appropriate cleaning techniques by applying the correct hand tools, equipment and material.*



## **Unit: ETH&S-306-1501 - Occupational Health and Safety in the Construction Industry**

**Unit level (MQF): 3**

**Credits: 6**

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### **Unit Description**

This unit provides learners with knowledge of risk that arise in the construction process. It will enable them to evaluate and predict the necessary safety precautions to work safely, efficiently and effectively on a building site.

Learners should understand the importance of safety procedures at work to ensure their personal health and safety, of their colleagues, as well as of third parties in the region and preserve a healthy environment.

They will demonstrate foresight and protection methods against harmful consequences in various situations by taking the right choice of appropriate personal protective equipment and appropriate safety procedures.

Learners will gain necessary skills for their appropriate behaviour related to the presence of dangers at workplace in order to reduce health risks prior to going to work, during work and after work.

### **Learning Outcomes**

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

- 1. Know the importance of occupational safety and health at the construction site and in the environment, and safe use of equipment (e.g. scaffolding);*
- 2. Identify hazards and risks, and assess their impact on workplace;*
- 3. Understand the importance of risk assessment and its application for occupational safety procedures.*