



# MCAST

Malta College of Arts, Science & Technology

MQF Level 1

ET1-01-20

**Introductory Certificate in Engineering**

**Course Specification**

## **Course Description**

This programme provides an opportunity to prospective students to explore basic principles and applications related to Engineering. The course will assist students in developing technical skills. The vocational units are designed to provide students with tool handling techniques, which would include soldering, material cutting and shaping, and assembly of electrical, electronic and mechanical components.

Students will have the opportunity to build simple projects which would be functional and useful. Students are also given the opportunity to enhance their key skills: English, Maltese, Mathematics, Science and Individual and Social Responsibility through vocational content. These key skills subjects are mostly embedded into each vocational area, thus promoting the practical aspect of these subjects.

## **Programme Learning Outcomes**

At the end of the programme the students are able to

- 1. Use mathematical principles to solve simple engineering problems;*
- 2. Understand the underlying principles and applications of basic engineering components and work safely using appropriate tools under supervision;*
- 3. Use instructions, schematics and basic tools to construct and test simple electronic circuits;*
- 4. Communicate using verbal, written and ICT methods during training and reporting.*

## **Entry Requirements**

- Finished compulsory education

### Other Entry Requirements

- Initial Assessment Tests
- A medical certificate for colour blindness is a necessary requirement to attend the course.

**Current Approved Programme Structure**

<b>Unit Title</b>	<b>ECVET/ECTS</b>
Fundamentals of Engineering	6
Basic Engineering Systems	6
Mathematics	5
English	5
Malti	5
Information Technology	5
Individual and Social Responsibility	3
Science	5
<b>Total ECVET/ECTS</b>	<b>40</b>

## Fundamentals of Engineering

**Unit level (MQF):** 1

**Credits:** 6

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### Unit Description

This unit is designed to introduce students to the fundamentals required when carrying out basic practical tasks in engineering environments. Students will have the opportunity to appreciate the importance of health and safety and the role of PPE to avoid injury. They will learn how to conduct basic measuring and marking out tasks and familiarise with a variety of hand tools, power tools and machine tools. Students will also recognise the importance of communicating in technical terms by using and interpreting engineering drawings. Students will also explore the properties of different materials such as wood, plastic and metal and their application in everyday life. These fundamentals of engineering will be delivered through basic practical tasks from the electrical, electronic and mechanical engineering fields.

### Learning Outcomes

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

1. *Work safely in an engineering environment.*
2. *Carry out measurements, marking out and communicate through drawings and sketches.*
3. *Identify tools commonly used in engineering tasks.*
4. *Understand the basic properties of wood, plastic and metal.*

## Basic Engineering Systems

**Unit level (MQF):** 1

**Credits:** 6

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### Unit Description

In this unit students will be introduced to some competencies and skills needed to carry out basic engineering tasks using a variety of tools and machinery. Students will experience the need to understand the tasks they are going to carry out and prepare the working area correctly. They will also experience what is involved when planning and carrying out the dismantling and assembling of basic engineering systems. During such tasks, students will gain basic knowledge and skills that are essential in mechanical, electrical and electronics engineering. This unit also provides the opportunity to students to learn about the energy conversions taking place in various engineering systems and the importance of efficiency in such systems. This unit focuses on practical tasks, helping students appreciate the importance of following given instructions and engage in engineering activity.

### Learning Outcomes

On completion of this unit the learner will be able to

1. *Prepare the working area before assembling basic engineering systems.*
2. *Understand the dismantling and assembly processes of basic engineering systems.*
3. *Identify the basic components of basic engineering systems.*
4. *Understand the energy conversions taking place in basic engineering systems.*