



MCAST

MQF/EQF Level 1

MV1-01-21

Introductory Certificate in Engineering

Course Specification

Course Description

This programme provides an opportunity to prospective learners to explore basic principles and applications related to Engineering. The course will assist learners in developing technical skills. The vocational units are designed to provide learners with tool handling techniques, which would include soldering, material cutting and shaping, and assembly of electrical, electronic and mechanical components. Learners will have the opportunity to build simple projects which will be functional and useful. They are also given the opportunity to enhance their key skills - English, Maltese, Mathematics, Science and Individual and Social Responsibility - through the 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 student is 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
- Initial Assessment Tests (as may be applicable)

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	
Level 4	VET Level 5 Programme ²⁵	60-120	Less than 120
	Pre-Tertiary Certificate	30	
	VET Level 4 Programme ²⁶	120	
Level 3	MATSEC Certificate	NA	Less than 60
	VET Level 3 Programme ²⁷	60	
Level 2	General and Subject Certificate	NA	Less than 60
	VET Level 2 Programme ²⁸	60	
Level 1	General and Subject Certificate	NA	Less than 40
	VET Level 1 Programme ²⁹	40	
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: 1000 hours

Mode of attendance: Fully Face-to-Face Learning

Duration: 1 Year

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

Target group: Learners who have completed compulsory education.

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 Għonoq 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, Għajnsielem

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 course 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:

MCAST Career Guidance

Tel: 2398 7135/6

Email: career.guidance@mcast.edu.mt

Current Approved Programme Structure

Unit Code	Unit Title	ECTS	Semester
ETENG-106-1701	Fundamentals of Engineering	6	Year
ETENG-106-1702	Basic Engineering Systems	6	Year
CDKSK-105-1926	Mathematics	5	Year
CDKSK-105-1927	English	5	Year
CDKSK-105-1928	Malti	5	Year
CDKSK-105-2106	Information Technology	5	Year
CDKSK-103-2101	Community Social Responsibility	3	Year
CDKSK-105-1930	Science	5	Year
Total ECTS		40	/

ETENG-106-1701: Fundamentals of Engineering

Unit level (MQF/EQF): 1

Credits: 6

Delivery Mode: Face to Face/ Practice

Total Learning Hours: 150

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.*

ETENG-106-1702: Basic Engineering Systems

Unit level (MQF/EQF): 1

Credits: 6

Delivery Mode: Face to Face/ Practice

Total Learning Hours: 150

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.*

Unit: CDKSK-105-1926: Mathematics

Unit Level (MQF/EQF): 1

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 125

Unit Description

The aim of this unit is to help the student to develop basic numeracy skills. It will enable and motivate the student to use basic mathematical knowledge to solve problems encountered in real-life situations. By the end of this unit, students will be able to use simple mathematical language to validate the solutions given to everyday problems. These problems will involve:

- (a) simple numerical calculations,
- (b) extraction and interpretation of data from statistical tables and charts,
- (c) communication in graphical form,
- (d) classification of flat shapes and solids.

Learning Outcomes

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

1. *Carry out simple numerical calculations with the use of a scientific calculator;*
2. *Give simple tabular and graphical representations of data;*
3. *Read and use units of measure;*
4. *Classify, draw and work with simple shapes and objects.*

Unit: CDKSK-105-1927: English

Unit Level (MQF/EQF): 1

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 125

Unit Description

This unit covers the four skills of the English language at MQF Level 1. By the end of the academic year, learners will have achieved exit-point at said Level 1.

This unit is internally assessed and verified. Assessment is carried out through assignments based on the Learning Outcomes below.

Learning Outcomes

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

- 1. Listen to and understand simple utterances delivered slowly and clearly articulated;*
- 2. Speak and communicate using functional English language used in everyday social and work environments;*
- 3. Read level-appropriate texts for practical purposes;*
- 4. Write level-appropriate texts for practical purposes.*

Unit: CDKSK-105-1928: Malti

Il-Livell tal-Unità: (MQF/EQF): 1

L-Għadd ta' Kreditu: 5

Mod ta' Tagħlim: Preżenti

Total ta' Sigħat ta' Tagħlim: 125

Ir-Razzjonal

Fil-kors preliminari tal-Ewwel Livell tal-Kulleġġ Malti tal-Arti, ix-Xjenza u t-Teknoloġija, l-ilsien Malti jintgħallem biex l-istudenti:

1. ikunu kapaċi jużawh biex jikkomunikaw u jirrelataw man-nies ta' madwarhom;
2. ikunu kapaċi jesprimu ħsushom, ħsibijiethom u xewqathom bil-fomm u bil-kitba;
3. jagħrfu l-aħjar mod li bih jitgħallmu u jisfruttaw il-potenzjal tagħhom;
4. jizviluppaw il-ħiliet meħtieġa biex isiru persuni indipendenti, responsabbli u intraprenditorjali;
5. jikkomunikaw fl-oqsma vokazzjonali tagħhom.

L-Għanijiet tat-Tagħlim

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

1. *jifhmu xi jkun qed jintqalilhom u jwasslu messaġġi bil-Malti;*
2. *jiksbu l-ħila li jtkellmu b'Malti tajjeb dwar ħwejjeġ ta' kuljum u l-qasam vokazzjonali;*
3. *jiksbu l-ħila li jaqraw testi qosra mibnija b'sentenzi sempliċi u jifhmuhom;*
4. *jiktbu b' Malti tajjeb kitbiet qosra u sempliċi skont ir-regoli tal-ortografija u s-sintassi.*

Unit: CDKSK-105-1930: Science

Unit Level (MQF/EQF): 1

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 125

Unit Description

The word science comes from the Latin word "scientia," which means knowledge, hence according to Webster's New Collegiate Dictionary, the definition of science is "*knowledge attained through study or practice,*" or "*knowledge covering general truths of the operation of general laws, esp. as obtained and tested through scientific method [and] concerned with the physical world.*"

This means that science refers to a system of acquiring knowledge which uses observation and experimentation to describe and explain natural phenomena. Therefore, the purpose of science is to produce useful models of reality.

There are 2 fields of science which are: the natural science, which is the study of the natural world, and the social sciences, which is the study of human behavior and society.

In this Level 1 key skill, learners will become familiar with the field of natural sciences. Learners will be covering topics from 3 different areas, which are: the living world, the physical world and the world of technology.

Learners will become familiar with living and non-living things, the 7 vital functions, group objects found in the natural environment according to whether they are living or non-living as well as the diversity of life. Hence, learners will be able to distinguish between plants and animals in terms of their physical characteristics, observe and group simple animals into different vertebrate groups according to their characteristics. In addition, learners will also be able to describe how animals depend on plants for their

survival as well as demonstrate an awareness of the interaction between plants and animals in a given environment.

Learners will also study the human life, that is; the body structure, knowledge of and the position of the main body organs and their function. This would lead to recognising the importance of physical health and the importance of healthy food, clean water and unpolluted air, the importance of a balanced diet and regular exercise as well as the harmful effects of drugs, alcohol and smoking.

With regards to the physical world learners will become familiar with matter and the 3 different states of matter, the knowledge about the materials that are used in everyday life, the basic physical properties including colour, hardness, odour, taste, solubility and electrical conductivity. Learners will also understand the properties and uses of natural materials e.g. wood, limestone; group objects used in everyday life based on their state of matter and physical properties.

Furthermore, learners will increase their awareness about local environmental issues including energy sources and waste management. Learners will become familiar with basic laboratory equipment, and the effect of friction in everyday life including situations where friction is useful and others where friction is unwanted, and situations where lubrication is used to reduce friction. Learners will be exposed to health and safety issues including ways of reducing exposure to threats to health, increasing the body's resistance to disease and minimising the bad effects of disease including the need of hygiene and inoculations to prevent disease; recognising situation of risk to safety in a particular environment and describing how to avoid accidents.

Via an investigation related to their area of study, as part of the last learning outcome, learners will be encouraged to think, ask questions and develop basic scientific skills including predicting the outcome/s, carrying out simple measurements, collecting and interpreting data. They will also be able to work on their communication skills by being provided with the opportunity to communicate their findings to their colleagues.

Learning Outcomes

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

- 1. Classify objects in the natural environment;*
- 2. Use simple scientific terms related to basic scientific facts;*
- 3. Understand the important role that science plays in everyday life;*
- 4. Develop personal basic scientific skills.*

Unit: CDKSK-105-2106: Information Technology

Unit Level (MQF/EQF): 1

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 125

Unit Description

This unit is made up of a number of competences including the competence to use personal computers; the competence to manage efficiently a personal computer; the competence to operate effectively within the operating system and the competence to make productive, creative, and efficient use of the main office application software packages: word processing software, presentation software, web-browsing software & e-mail management software. Special attention is also given to the security aspects when using the internet and related services.

This unit is designed to ensure that learners are not only taught the knowledge and skills associated with productive, creative, and effective use of personal computers but should be given sufficient opportunities to find, exchange and share information. This should also ensure that learners develop the proper and correct attitudes associated with the use of information and ICT.

This unit should guide the learners to have a broad understanding of how ICT can help their learning, their work, and their social life. Learners will start to develop the ability to decide when and how to use ICT and be aware of the limitations associated with this use.

Learning Outcomes

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

1. *Demonstrate basic use of an operating system and file management.*
2. *Carry out simple tasks associated with a word processing application.*
3. *Use presentation software to develop basic presentations.*
4. *Browse the Internet and communicate using electronic communication.*
5. *Use the main concepts underlying secure ICT practices in daily life.*

Unit: CDKSK-103-2101: Community Social Responsibility

Unit Level (MQF/EQF): 1

Credits: 3

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 75

Unit Description

This key skill presents the opportunity for MQF level 1 learners to explore their individual self and their social environment. Learners will become familiar with and understand different aspects of their personal self as well as become familiar and grasp different life skills that would empower them to become active members in society. Whilst becoming more aware of themselves, learners will have the possibility to further explore their surroundings and understand their relation and responsibility towards others. The learners will also be presented with basic tools and techniques, which will empower them in developing basic organisational skills. Through the completion of a compulsory community work experience, learners will recognise the benefits of self-management skills towards the acquisition of balance within one's lifestyle.

Learning Outcomes

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

- 1. Identify the relation between basic personal traits and interests upon the development of the self.*
- 2. Identify opportunities for self-development within surrounding communities.*
- 3. Recognise adequate presentation and behaviour within different social contexts.*
- 4. Describe the experience acquired through a community work initiative.*