



MCAST

MQF/EQF Level 2

MV2-01-21

Foundation Certificate in Engineering

Course Specification

Course Description

This course is designed to provide an opportunity to prospective learners to follow a structured programme of study in Engineering. The programme includes a significant amount of hands-on practice, project-based learning and industry-related activities that will help learners form a clear idea of the nature of the engineering trade or vocation they intend to follow. This one-year Level 2 programme provides a broad introduction to basic theoretical concepts and practical skills in Mechanical, Electrical and Electronics Engineering and is suitable for those learners intending to start and further their studies in Engineering. Key skills subjects also form an integral part of this programme, giving learners the opportunity to nurture their competences in key areas: English, Maltese, Mathematics, Science, Information Technology and Individual and Social Responsibility.

Programme Learning Outcomes

At the end of the programme the students are able to

- 1. Use basic marking, measurement and hand tools found in an engineering workshop and produce basic engineering drawings.*
- 2. Use basic principles of mathematics and physics to represent and solve basic engineering problems.*
- 3. Construct and test a range of simple electrical and electronics circuits.*
- 4. Carry out basic milling, bench fitting, turning techniques and welding tasks safely.*

Entry Requirements

MCAST Introductory Certificate

OR

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	
	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 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 Targħa 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
ETELE-206-1601	Introduction to Electrical Systems	6	Year
ETELX-206-1601	Introduction to Electronics Systems	6	Year
ETENG-206-1601	Working in Engineering	6	Year
ETMEC-206-1601	Basic Mechanical Engineering Techniques	6	Year
CDKSK-206-2006	Mathematics	6	Year
CDKSK-206-2004	English	6	Year
CDKSK-206-2005	Malti	6	Year
CDKSK-206-2107	Information Technology	6	Year
CDLSK-206-2102	Community Social Responsibility	6	Year
CDKSK-206-2008	Science	6	Year
Total ECTS		60	/

ETELE-206-1601: Introduction to Electrical Systems

Unit level (MQF): 2

Credits: 6

Delivery Mode: Face to Face/Practical

Total Learning Hours: 150

Unit Description

This unit will introduce students to the basic principles and effects of electricity and the application of these principles in modern electrical systems. They will also learn how these systems can contribute to a healthier environment.

Students will learn how to use a variety of tools and equipment and apply appropriate working techniques to operate and test basic electrical systems safely and effectively. Students will also learn about the basic safety devices used in modern electrical systems and how these are installed and tested.

This unit will provide students the opportunity to take part in practical tasks not only in the construction of basic electrical systems, but also in the generation of electricity from renewable sources that are relevant to the local context.

Learning Outcomes

On completion of this unit the learner will be able to

- 1. Identify and make use of equipment and tools to install and test electrical systems.*
- 2. Understand the effects of electricity and how these are used in today's technology.*
- 3. Apply the principles of electricity to solve basic electrical related problems with practical applications.*
- 4. Understand ways of generating and distributing electricity within the local context particularly through Renewable Energy Sources.*

ETELX-206-1601 Introduction to Electronics Systems

Unit level (MQF):2

Credits: 6

Delivery Mode: Face to Face/Practical

Total Learning Hours: 150

Unit Description

In this unit students will learn to identify and use basic electronic components according to given circuit schematics and to meet given specifications. Students will have the opportunity to use CAD software to draw basic electronic circuits that will later be constructed as prototypes and tested. Students will also gain experience in handling a variety of tools and equipment. They will also learn how to handle electronic devices and equipment in order to avoid damage. Students will also have the opportunity to explore Electronic Control Systems and through assistance, they will integrate them in other areas of engineering such as automotive, renewable energy and mechanical.

Learning Outcomes

On completion of this unit the learner will be able to

- 1. Use information from drawings and related documentation.*
- 2. Identify and explain the function of electronic components, devices, tools and equipment.*
- 3. Construct and test the prototype of a basic electronic circuit making use of appropriate tools.*
- 4. Use electronic devices to operate a basic automation system.*

ETENG-206-1601 Working in Engineering

Unit level (MQF):2

Credits: 6

Delivery Mode: Face to Face/ Practical

Total Learning Hours: 150

Unit Description

The aim of this unit is to equip students with knowledge, skills and good work practices that will help them work effectively and safely in engineering environments. In this unit, students will explore the role of engineering, its benefits to society and the various disciplines it includes. Students will familiarise themselves with the basics of the Engineering Design Process, a systematic approach used by engineers to problem solving. Students will also learn the importance of maintaining engineering systems in good working order and will have the opportunity to assist in basic routine maintenance tasks. They will also carry out such tasks under supervision. The unit will also help students improve their communication skills through the documentation of processes and procedures, as well as through the use of engineering drawing and CAD software.

Learning Outcomes

On completion of this unit the learner will be able to

- 1. Understand safe work practices and safe job procedures in an engineering environment.*
- 2. Understand what engineering is and how it affects society.*
- 3. Communicate effectively in an engineering environment.*
- 4. Follow instructions and steps in maintaining engineering systems.*

ETMEC-206-1601 Basic Mechanical Engineering Techniques

Unit level (MQF): 2

Credits: 6

Delivery Mode: Face to Face/ Practical

Total Learning Hours: 150

Unit Description

The aim of this unit is to provide students with the opportunity to develop basic knowledge and skills that are important in a mechanical engineering environment. Students will familiarise themselves with key engineering materials and how these are applied in everyday life. They will carry out basic material removal techniques and metal forming and joining techniques commonly used in mechanical engineering workshops to learn how to handle tools, equipment and machinery safely and correctly. While learning these skills and techniques, students will have the opportunity to fabricate a basic mechanically working device that can be integrated with other areas of engineering.

Learning Outcomes

On completion of this unit the learner will be able to

- 1. Be familiar with key engineering materials and their properties for a specific application.*
- 2. Know and apply basic material removal techniques.*
- 3. Know and apply basic metal forming techniques.*
- 4. Understand and apply basic MMA welding and Oxy-Acetylene cutting.*

CDKSK-206-2006 Mathematics

Unit level (MQF): 2

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This unit aims to develop basic mathematical knowledge and skills needed in real-life situations. In a supportive environment, the student will be challenged to understand mathematical problems, reflect on different plans that could be used to solve the given problem, attempt an answer and check the validity of an answer to the problem. By the end of this unit, students will be able to describe orally or in writing the reasons behind the mathematical arguments used and to break down complex problems into smaller and simpler problems. These problems will involve:

- (a) numerical calculations,
- (b) classification of shapes,
- (c) understanding and simple application of symbolic notation,
- (d) communication in graphical form,
- (e) manipulating simple algebra, and
- (f) extraction and interpretation of information from statistical tables and charts.

Learning outcomes

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

1. *Compute numerical calculations by showing all the necessary working.*
2. *Carry out harder numerical calculations.*
3. *Collect data and represent it graphically.*
4. *Use simple algebraic formulae.*
5. *Draw and work with lines, shapes and objects.*
6. *Read and use measurement scales.*

CDKSK-206-2004 English

Unit level (MQF): 2

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

In all Foundation Certificate programmes across MCAST, the ability to communicate in our second language becomes both a necessity for life as well as for education and work.

The speaker of English should be aware of the importance and daily use of English as a tool for interacting in the immediate community, whether domestic, public or professional. English is also the main language of instruction in higher education nowadays.

Communicating in English takes into account all the four language skills of listening, speaking, reading and writing according to the prescribed level. Emphasis is placed on knowing how to use a language, rather than just knowing about a language.

This unit is targeted at learners proceeding from Level 1 (therefore taking into account successful completion of Level 1 English) as well as those whose entry level is directly at Level 2.

It is assumed that no entry qualifications such as SEC English (Ordinary Level) are necessary for learners to undertake this unit.

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 a learner will be able to:

1. *Listen to connected speech on a range of vocational topics.*
2. *Speak clearly during interactive communication scenarios and deliver a clear message.*
3. *Read to identify and comprehend information presented textually in formal, vocational and familiar contexts.*
4. *Organise and write text in paragraphs of simple, complete and syntactical sentences.*

CDKSK-206-2005 Malti

Unit level (MQF): 2

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Ir-Razzjonal

Fil-korsijiet preliminari tat-Tieni Livell tal-Kulleġġ Malti tal-Arti, ix-Xjenza u t-Teknoloġija, l-ilsien Malti jintgħallem għax:

1. Ninqded bih biex nikkomunikaw u nirrelataw man-nies ta' madwarna;
2. Nużawh biex b'mod kreattiv nesprimu l-emozzjonijiet, ħsibijietna u xewqatna;
3. Jintuża fl-oqsma vokazzjonali u għandu registru tekniku Prattiku u funzjonali;
4. Jigbor fih l-identità lingwistika u kulturali ta' ġensna.

L-Għanijiet

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

1. Jwieġbu mistoqsijiet, jikkellmu b'Malti tajjeb kif ukoll jieħdu sehem f'taħditiet u f'diskussjonijiet.
2. Jifhmu dak li jsimgħu.
3. Jaqraw u jifhmu testi varji.
4. Jiktbu b' Malti tajjeb skont ir-regoli tal-ortografija u s-sintassi.

CDKSK-206-2107 Information Technology

Unit level (MQF): 2

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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, spreadsheet software, presentation software, web-browsing software & e-mail management software.

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 a learner will be able to:

1. *Identify the main concepts of ICT and computer management.*
2. *Use a word processing application to accomplish basic everyday tasks.*
3. *Use a spreadsheet application to input, format data and prepare charts.*
4. *Create basic presentations using presentation software.*
5. *Apply essential web browsing and electronic communication concepts and skills.*

CDKSK-206-2102 Community Social Responsibility

Unit level (MQF): 2

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

This key skill presents the opportunity for MQF level 2 learners to explore their individual self and their social environment whilst also reflecting about future goals. Learners will identify and understand different aspects of their personal self, whilst reflecting upon what composes their self-confidence. Learners will also become familiar and grasp different life skills that would empower them to explore their surroundings and become responsible and inclusive members in society.

The learners will also be presented with tools and techniques, which will assist them in becoming more employable whilst honing their 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. The completion of the compulsory community work project will also present the ideal opportunity for the learners to analyse their experience and evaluate their own performance.

Learning Outcomes

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

1. *Identify personal attributes and experiences that influence the development of the self.*
2. *Examine ways and means towards becoming more employable.*
3. *Recognise responsible interactions between the individual and the surrounding communities.*
4. *Explain duties and requirements for engaging in a community work experience.*

CDKSK-206-2008 Science

Unit level (MQF): 2

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

Unit Description

In this Level 2 key skill, learners will enhance their knowledge on the aspect of natural sciences, mainly via focusing on three different areas which consist of the living world, the physical world and the world of technology.

As part of the living world, learners will learn about the basic unit of which all living things are composed of - the cell and its components. Furthermore, they will become familiar with the differences and similarities between plants, animals and fungi based on their physical characteristics and the way they obtain food. Learners will also enhance their knowledge on the organisation of the human body - different organs that carry out different functions, are located in different areas of the body and are grouped forming body systems. Also, learners will increase their awareness on factors that affect the overall well-being of an individual, including diet and lifestyle.

In the case of the physical world, learners will become familiar with different materials found in the immediate environment. They will observe and describe their physical properties and then be able to compare and classify objects/materials/tools based on their physical properties. It is strongly suggested that lectures refer to objects/materials/tools that are related to the learners' area of study so as to increase the relevance of the topic. Learners will discuss advantages and disadvantages of local energy sources, combustion of fuels, associated hazards and action to prevent accidents, methods via which heat is transferred and the importance of insulation.

The main focus of the area 'the world of technology' will be on health and safety whereby the learner will describe and explain ways of reducing exposure to threats to health and safety at home and in the workplace, discuss how one can increase the body's resistance to disease, and recognise situations of risk to safety and increase awareness about how to avoid accidents.

The remainder of the unit will consist of an investigation related to the environment; with one of these investigations completed in collaboration with Birdlife Malta.

Learning Outcomes

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

- 1. Communicate scientific information by using the scientific process skills of observing and grouping.*
- 2. Apply science to enhance the quality of everyday life.*
- 3. Promote sustainable living by exploring the link between the natural world and human behaviour.*
- 4. Investigate the impact of anthropogenic activities on the environment.*