MQF/EQF Level 6

CE6-A3-21

Bachelor of Science (Honours) in Construction Engineering (Civil Engineering)

Course Specification

Course Description

This degree course gives the learners opportunities to explore management skills and technical knowledge associated with the diverse and challenging tasks that are in continuous change with the introduction of new materials to meet zero energy building requirements and various integrated design concepts. In addition, the programme empowers one with the necessary design and evaluation techniques to be able to make professional judgements on technical, social and ethical issues during the planning and execution of construction projects. The Civil Engineering specialised units are for those who are interested in Site Spatial Engineering, Engineering Geology, and Soil Mechanics and Structural Analysis. By the end of the programme, one will be able to work independently, with a significant amount of research and self-directed learning, both within and outside the Institute environment.

Programme Learning Outcomes

At the end of the programme the learner will be able to:

1. *Evaluate and design managerial functions in the construction and the built environment sector*
2. *Analyse and evaluate sustainable design options for buildings/ civil engineering tasks*
3. *Understands and compare construction materials in terms of properties, behaviour and characteristics*
4. *Examine and coordinate design development, maintenance and renovation for residential, commercial, industrial and civil engineering project*

Entry Requirements

MCAST Advanced Diploma in Building Services Engineering
OR
MCAST Advanced Diploma in Construction Engineering
OR
MCAST Advanced Diploma in Civil Engineering
OR
Undergraduate Diploma in Foundations of Engineering
OR
2 A-Level passes and 2 I-Level passes
Compulsory A-Levels: Physics and Mathematics (Pure or Applied)

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: 4,500

Mode of attendance: Fully Face-to-Face Learning

Duration: 3 Years

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

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 Tarġa 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 005 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 005 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 though 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 joint 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	Year	Semester
ETCVE-505-1901	Civil Engineering Technology	5	1	A
ETCDN-505-1900	Computer Aided Design for Construction	5	1	A
ETCNS-505-1902	Design Principles and Applications for Construction and the Built Environment	5	1	A
ETMTS-505-1900	Science and Materials for Construction and the Built Environment	5	1	B
ETCVE-505-1902	Site Surveying Procedures for Construction and the Built Environment	5	1	B
ETCVE-505-1903	Structural Analysis and Design	5	1	B
ETH&S-506-1512	Health, Safety and Welfare for Construction and the Built Environment	6	1	B
ETMTH-506-1514	Applied Mathematics for Construction and the Built Environment	6	1	A
ETCVE-506-1502	Contractual Procedures & Procurement for Construction and the Built Environment	6	1	A
CDWBL-506-1901	Work based Learning – Part 1	6	1	B
CDKSK-503-1907	English 1	3	1	A
CDKSK-503-1908	English 2	3	1	B
ETCVE-506-1505	Advanced Civil Engineering	6	2	A
ETMTH-506-1515	Applied Mathematics for Complex Engineering Problems	6	2	B
ETGEO-506-1502	Engineering Geology and Soil Mechanics	6	2	A
ETPRJ-506-1519	Group Project in the Construction Industry	6	2	B
ETMGT-506-1510	Management Principles and Application	6	2	A
ETCNS-506-1527	Measuring, Tendering and Estimating for Construction and the Built Environment	6	2	B
ETPRJ-606-2101	Project Design and Implementation	6	3	A
ETMGT-506-1515	Project Management for Construction and the Built Environment	6	2	A
ETPRJ-506-1521	Research Project	6	2	A
CDWBL-506-1902	Work based Learning – Part 2	6	2	B
CDKSK-604-1909	Entrepreneurship	4	2	B
CDKSK-602-2105	Community Social Responsibility	2	2	B
ETBSV-606-1506	Advanced Building Services	6	3	A
ETCNS-606-1528	Advanced Construction and Civil Engineering Technology	6	3	B
ETMGT-606-1502	Advanced Project Management	6	3	A
ETMTS-606-1511	Building Materials	6	3	B

ETMTH-606-1516	Mathematical Methods	6	3	A
ETMGT-606-1514	Real Estate and Facilities Management	6	3	B
ETRSH-600-1502	Research Methods	0	3	YEAR
ETBSV-606-1511	Sustainable Buildings	6	3	A
ETDIS-612-1502	Project & Dissertation	12	3	YEAR
Total ECTS		**180**	**/**	**/**

***Optional Unit** – ETCNS-505-1900 - Building Control Procedures and Legislation.*

This unit is not part of the formal structure for this programme. However, learners have the opportunity to take unit 'ETCNS-505-1900 - Building Control Procedures and Legislation' on a voluntary basis.

ETCVE-505-1901: Civil Engineering Technology

Unit level (MQF/EQF): 5

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 125

Unit Description

This unit provides a broad theoretical and practical knowledge of the methods and techniques used in earthwork activities, substructures and the superstructures. It provides facts, basic principles and procedures related to the field of civil engineering technology including the hazards and risks involved in civil engineering construction activities.

This course provides a cognitive and practical skills required to carry out multiple tasks in civil engineering technology. They will learn how to communicate information to the members of construction team generating solutions to specific problems.

Learners explore how earthworks, control of ground water and excavations are undertaken and look at the factors influencing construction methods using plants and machineries on site. They will have the opportunity to investigate soil for the design of foundation and the substructure construction, piling work and drainage systems. They will learn the methods of superstructure construction of domestic, commercial buildings and industrial buildings using reinforced concrete and structural steelwork.

They will know the basic principles of construction management, risks, safety arrangements, The Construction Design and Management Regulations 2007 (CDM) and the roles and responsibilities of all parties in civil engineering projects including Health, Safety and Welfare Inspectorate (HSWI).

Learners will know the interrelationships of activities, quality control, arising issues and their solutions.

Learning Outcomes

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

1. *Describe the methods and techniques used in earthwork activities and how to control the groundwater;*
2. *Outline the methods and techniques used in the construction of substructures;*
3. *Identify the methods and techniques used in the construction of superstructures;*
4. *Explain the hazards in construction activities and how to solve problem associated with civil engineering and construction activities.*

ETCDN-505-1900: Computer Aided Design for Construction

Unit level (MQF/EQF): 5

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 125

Unit Description

This unit shall provide the learner with the understanding of the basic knowledge, principles, and application for Computer Aided Design (CAD). Through this module the student shall become knowledgeable in the theoretical foundations within the design process which is to include a brief touch-up on the sketching techniques (which are essential pre-requisite prior to using computer aided tools). This module shall also include the understanding and basic knowledge concerning the integration of processes for BIM. With this knowledge the learner shall be able to understand the abilities that such computer aided processes will provide the user. This will also lead to help the learner with an understanding of the financial and organisational factors that are involved.

This unit will provide the learner with abilities to create 2D and 3D drawings using a CAD program which is generally implemented for building, building services and construction designs. The learner shall become accustomed with the different types of CAD modelling; which include Feature Modelling and Parametric Modelling. The student shall be knowledgeable of the different final displaying features as well as proficient in using title blocks, scaling, rendering, and plotting formats. The different options of exporting formats will also be explored.

The learner will be able to implement the principles and knowledge onto provided CAD application software. The learner should be able to show the general basic functions required to produce a drawing as well as have the ability to interpret and modify existing drawings. This will also lead to the learner having capabilities to export respective drawings into different formats which would in turn be suitable for other operations such as; different software operators, client's reviewing, and/or machines software.

Learning Outcomes

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

1. *Explain the knowledge, application and principles of Computer Aided Design including sketching techniques and the integration of CAD in BIM applications;*
2. *Produce, modify and interpret new and existing 2D and 3D designs using industry related CAD software;*
3. *Produce 2D and 3D construction drawings to industry standards;*
4. *Plot and export designs to different formats.*

ETCNS-505-1902: Design Principles and Applications for Construction and the Built Environment

Unit level (MQF/EQF): 5

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 125

Unit Description

The aim of this unit is to enable learners to gain a broad knowledge of design principles of building construction. The professionals in construction industry require a working knowledge and skills to be part of a design team.

The focus of this unit is on linking design principles with practical applications in construction, civil engineering and building services engineering. Learners will know the nature of building materials and their properties.

Learners will understand the importance of energy and its efficient use. They will know the durability of building materials, importance of buildability and sustainability. They will learn the responsibilities of other members of the design team and participate in the design process of the construction project.

Learners will understand the various phases of design and know the importance of specifications. They will learn how to write specification of materials and work involved in construction. Learners will gain knowledge of the properties of materials and understand the techniques of construction at various stages. They will know the roles and responsibilities of the design team and will know how to communicate with them.

Learners will know the health, safety and welfare regulations and understand the risks involved on construction site. They will understand the Risk Assessment methods.

Learning Outcomes

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

1. *Explain the planning and design phases of the construction process;*
2. *Use the specification of materials and building services prepared by the design team;*
3. *Explain how environmental factors affect the planning and design phases of the construction process;*
4. *Use the roles and responsibilities of all parties involved in construction projects.*

ETMTS-505-1900: Science and Materials for Construction and the Built Environment

Unit level (MQF/EQF): 5

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 125

Unit Description

The aim of this unit is to enable learners to gain knowledge of the nature and properties of building materials. They will learn the chemical composition of materials and understand the effect of forces applied on building elements, the performance criteria applicable to construction materials, and the techniques used to produce such materials. Learners will be able to know the relationship between stress and strain, deformations produced in the building elements and turning effect due to application of forces. They will also gain an understanding how to prevent and remedy their deterioration.

Buildings provide shelter and create a comfortable space in which to live or work. Thermal comfort, visual comfort and aural comfort within the built environment are important parameters for the occupants of the building. Learners will know the methods to achieve human comfort. The occupants of a building require a comfortable internal environment and the understanding what is acceptable to different end users who undertake a variety of tasks and activities is an essential requirement of good design and performance of the building. Learners will know the mechanism of heat transfer, propagation of sound within the buildings and lighting design for various tasks in the building spaces. They will also learn the installation and performance of building services in buildings.

Learning Outcomes

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

1. *Explain the nature and properties of building materials;*
2. *Explain how forces act on structures;*
3. *Explain the basic factors that affect human comfort in a built environment;*
4. *Use the techniques of installation of building services.*

ETCVE-505-1902: Site Surveying Procedures for Construction and the Built Environment

Unit level (MQF/EQF): 5

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 125

Unit Description

This unit will enable learners to gain knowledge of principles of site surveying and setting out processes in construction and civil engineering projects. They will know how the pegs, profiles or other marks are set on the site to ensure that each element of the building or road works is constructed in the right position at the correct level.

Learners will get the opportunity to develop the skills needed to carry out surveys to establish the levels of points, determine coordinates of stations, and survey land and buildings. They will develop knowledge of emerging technologies in control and topographic surveys. Drawings in digital format can be sent to the client electronically, and are often input directly into their own software for analysis, planning or design of the project. Learners will be able to use the modern equipment and software available for site surveying. They will learn how the data is transferred from the instrument to suitable software for processing and the production of the required drawings. They will develop the skills required for cartographic details using computer-aided plotting.

The professional surveyor must be confident with the underlying mathematics involved in the processing of data, and calculations are therefore an important part of the unit. Learners should have an understanding of trigonometry and basic mathematical principles before starting this unit.

Learning Outcomes

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

1. *Establish grids of levels and contours to carry out area and volume calculations;*
2. *Use modern instruments and control the levels and gradients of construction works;*
3. *Produce GIS maps and cartographic detailing of construction works;*
4. *Use available software for site surveying.*

ETCVE-505-1903: Structural Analysis and Design

Unit level (MQF/EQF): 5

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 125

Unit Description

This is a skills based unit and will allow learners to understand the fundamentals behind structural analysis. This unit should follow up on the level 4 units titled S*tructural mechanics and Structural analysis and design.* Some revision will be carried out of the main topics as it is important that learners truly understand the topics before embarking on the more complicated ones. This unit should serve as a continuation of the topics covered in those modules. Learners will revise the analysis of statically determinate beams and frames and will carry out examples in order to deduce the bending moment and shear force diagrams. Lectures will then delve onto the analysis of determinate arches which are commonly used in construction.

Learners will also be taught Macaulay's method for the calculation of bending moments and deflections as this method is a very important tool for basic structural analysis. Compression members will also be introduced as well as explained and the fundamental structural concepts for axial load and moment will be taught. Euler's method for determining the critical load will be explained and calculations will be carried out on the subject.

Statically indeterminate structures will be revisited and their importance (and use) in construction will be further demonstrated. Learners will be taught how to analyse simple structures using the flexibility and stiffness methods of analysis.

The last part of this unit will be focused on structural design. The main type of elements used in reinforced concrete will be covered and include foundations, beams, columns and slabs. The importance and placement of steel reinforcement in these elements will be thoroughly covered.

The detailing and design requirements in structural steel frames will be covered and lecturers will focus on column and beam section and connections. Besides simple connections the unit will also introduce the learner to moment connections.

This should serve as a good basis to the level 5 unit titled Structural behaviour and detailing which will tackle structural design in greater detail.

Learning Outcomes

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

1. *Analyse statically determinate structures including, simple beams, 3 pin frames and arches;*
2. *Analyse simple beams using Macaulay's method and understand the behaviour of compression members;*
3. *Analyse statically indeterminate structures using the 2 main method of analysis;*
4. *Familiarise themselves with the main types of elements used in structural concrete and steel.*

ETH&S-506-1512: Health, Safety and Welfare for Construction and the Built Environment

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

The aim of this unit is to enable learners to understand the responsibilities of employers and employees to take measures to reduce risk and to meet legal requirements. Learners will gain knowledge of how to undertake risk assessments, record accidents and follow the reporting procedures.

Learners will explore the importance of planning for health and safety for themselves and others. They will investigate dangerous occurrences, common accidents and how to report an accident. Learners will explore risk assessment methods and control measures in construction. They will identify physical, environmental, psychosocial, chemical and biological hazards at work place. They will know the method of designing a risk assessments format that can be understood by everyone. Learners will know the legal requirements and safe systems of work and become familiar with components of health and safety management systems.

Learners will know the control measures for lifting and manual handling, working at height and working in excavations to avoid risks of accidents and injuries. They will know how to control site traffic and plant and apply general policies on non-smoking, drugs and alcohol at workplace for health and safety of all the construction team at site. They will know the procedures for accident investigation, recording accidents and responsibilities during evidence gathering, interviewing and questioning to prepare report of Injuries, root causes and explanation of contributory factors.

Learning Outcomes

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

1. *Explain the responsibilities of employers and employees under current health, safety and welfare legislation applicable to the construction and built environment sector;*
2. *Design risk assessment methods and techniques using appropriate principles and formats;*
3. *Implement the control measures used to reduce risk and meet legal Requirements;*
4. *Explain employee role in recording accidents and reporting procedures.*

ETMTH-506-1514: Applied Mathematics for Construction and the Built Environment

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

This unit has been designed to build upon previous mathematical knowledge covered in Mathematics in Construction and the Built Environment, to be used in a more practical construction context. Therefore, it is assumed that the learner has successfully completed this unit prior to commencing Applied Mathematics for Construction and the Built Environment.

Furthermore, it acts as an essential basis for the successful completion of many of the other units within the qualification. Delivery of the unit should be set within the context of the award to which it contributes.

The first learning outcome will build upon the learners existing algebra skills and includes manipulating and solving equations that contain exponentials and logarithms, solving direct and inverse proportion problems in a construction context, using graphs to solve problems Displacement, velocity, acceleration, momentum, impulse and projectiles are introduced within this outcome and exploring matrices and using them to solve problems.

Learners will develop their trigonometry skills and ability to calculate areas and volumes of irregular shapes in learning outcome 2.

Learning outcome 3 will return to statistics to further develop techniques used to represent and interpret data and applying this technique in a practical context.

Learning outcome 4 will develop the student's knowledge of using vectors to represent and solve problems involving forces, velocity, time and displacement. Students will also be introduced to calculus and using differentiation and integration to solve problems.

Learning Outcomes

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

1. *Apply algebraic and graphical methods to construction problems;*
2. *Apply trigonometry methods to construction problems;*
3. *Apply statistical methods to construction problems;*
4. *Apply vectors and calculus methods to engineering problems.*

ETCVE-506-1502: Contractual Procedures and Procurement for Construction and the Built Environment

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

This unit is aimed at re-enforcing and gaining further knowledge of contractual procedures and procurement in the construction industry. Within this unit the learner will encompass extended knowledge of procurement and contract forms that can be utilized within the industry. The methods of teaching will be at the discretion of the delivering centre, but must not be detrimental to the contents of the unit.

The learners will be assessed on their accurate knowledge of currently practised strategies of procurement and contract arrangements and administration for a range of construction projects and associated standard types and forms of contract. Explanation of the roles of contracting parties as well as their rights and obligations, compliance and dispute resolution is also required.

The learning is a blend of practical and theoretical work, which will allow the teaching centre a range of teaching and learning styles to be encompassed, as appropriate to the given situation. The student should have already developed an awareness of personnel involved within the construction industry and typical types of construction project. Previous successful study of lower level units in this area of study is required. All practices should be relevant to current best practice and recognized issues within the construction industry, as appropriate to local practice. All work should be completed to current legislation, with reference to the latest standard forms of contract, and good practice should always be adhered to.

Any health and safety issues should be shown on the risk assessment, which should be made available to the student.

Learning Outcomes

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

1. *Know the factors which affect the choice of construction procurement methods and contractual arrangements;*
2. *Know current issues and best practice, associated with the procurement of construction projects;*
3. *Know the roles and activities of the parties and organisations involved in the procurement of construction projects;*
4. *Be familiar with construction contracts in terms of time, cost and quality;*
5. *Be familiar with construction contracts in terms of supply chain management.*

ETCVE-506-1505: Advanced Civil Engineering

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

This is a skills based unit which will cover most of the main concepts involved in the construction of buildings in terms of civil engineering. The unit will first delve into the concepts and methodologies used in the construction and design of earthwork activities. The importance of site investigation will be thoroughly discussed whilst the location and significance of earth pressure and well as the ground water location will be well emphasised. The excavation of deep basements will be described adequately whilst the construction used for retaining walls and footings will be covered in detail. The main types of foundations used in structures will be covered and a general outline on tunnelling and drainage works will be given to the students.

The properties of reinforced concrete and structural steel will be briefly covered with an emphasis on the reason for their use. Learners will be encouraged to be able to briefly judge when one material is better suited than another. The overall main types of concepts in the design of structural steel frame elements will be taught which will allow the learners to participate adequately when working in a design office.

Lecturers will also delve into the structural systems deployed in the design of single storey buildings, multi storey buildings and industrial buildings as well as bridges. This part of the course should be very interesting to students as it will allow them to learn about more complex civil engineering structures. Bridges are perhaps the most fascinating of all structures and whilst the lectures will be mainly visual the knowledge imparted will allow learners to gain an understanding of the construction and site requirements of the various bridge typologies.

The last part of the unit will focus on the role of the civil engineer and the requirements of the professional during the construction stage of a project.

Learning Outcomes

On completion of this unit the student will able to:

1. *Describe the methods and techniques used in earthwork activities and to create sub structures;*
2. *Outline the mechanical and physical properties of reinforced concrete and structural steelwork;*
3. *Identify the methods and techniques used to create superstructures;*
4. *Identify the hazards and methodologies associated with civil engineering activities.*

ETCNS-505-1900: Building Control Procedures and Legislation

Unit level (MQF/EQF): 5

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 125

Unit Description

The unit aims to develop an understanding of building control procedures and legislation applicable to residential, industrial and commercial development and associated construction activities.

Students will understand how building control systems have evolved over time and how these have been applied in the construction sector. Students will also learn about the processes involved in primary and secondary legislation. They will gain knowledge about the structure, principles and features of relevant legislation as well as the legal framework with respect to regulations, permits and enforcement. Students will also have opportunities to develop knowledge and skills as how regulations apply to various stages of a project such as design and construction stages.

Students will examine relevant legislation and develop an appreciation of the legal processes. Students will gain skills in applying the regulations to range of projects and processes. They will understand the obligations of various parties such as developers and contractors. Students will also develop an understanding of compliance, various notifications and inspections.

They will also investigate the structure and efficiency of the enforcement system and mechanisms and their effectiveness as well as limitations. Students will review the enforcement procedures and for various types of construction work such as demolition works.

Learning Outcomes

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

1. *Explain the building control systems;*
2. *Examine the relevant legislation;*
3. *Apply building regulations;*
4. *Review the enforcement procedures.*

ETMTH-506-1515: Applied Mathematics for Complex Engineering Problems

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

This unit has been designed to build upon previous theoretical mathematical knowledge to be used in a more practical engineering context. It acts as an essential basis for the successful completion of many of the other units within the qualification. Delivery of the unit should be set within the context of the award to which it contributes.

The first learning outcome will develop the skills necessary for learners to be able to use trigonometry to represent and solve engineering problems. This outcome will include trigonometric graphs, the sum of sine and cosine functions and graphs and using trigonometric identities to simplify and solve equations.

Learners will develop their algebra skills to enable them to solve problems in an engineering context in learning outcome 2. Matrices are introduced and used to solve simultaneous equations; the Gaussian Elimination method, Bisection and Newton Raphson method for solving equations are explored to enable learners to solve more complex equations.

Learning outcome 3 will return to calculus to further develop techniques including partial differentiation, integration by parts, integration by substitution and determining the location and nature of stationery points for functions that contain two variables. Area and volume problems including the volume of a revolution, area between two curves, centroids, second moment of area, radius of gyration are techniques which are also developed. Students will then be shown how to apply these techniques in an engineering context.

Learning Outcome 4 includes first and second order linear differential equations, Euler and Runga-Kutta methods and applying these techniques to solve engineering problems.

Learning outcome 5 will develop the student's knowledge of statistical techniques. This will include sampling methods, linear regression, binomial and Poisson distributions and

learners will be able to use these skills to analyse, model and solve engineering problems.

Learning Outcomes

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

1. *Use trigonometric techniques to solve problems;*
2. *Use algebraic techniques to solve engineering problems;*
3. *Apply calculus to solve engineering problems;*
4. *Use statistical techniques to solve engineering problems.*

ETGEO-506-1502: Engineering Geology and Soil Mechanics

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

The aim of this unit is to explore the nature of rock, mineral and hydrocarbon resources. They will learn the formation of natural resources, their exploration and extraction as well as the environmental impact to these activities. Geological resources have been formed by igneous, sedimentary and metamorphic processes throughout geological time. Geologists are involved in studying the formation of natural resources, carrying out prospection, exploration, extraction and processing of these resources.

This unit enables learners to develop an understanding of their use in construction industry. They will learn how to classify the soil and analyse their properties and characteristics.

This unit provides learners with skills to establish primary design parameters for soils and discuss the ground investigation elements of site investigation. It covers the skills required to test soils to current codes of practice and the associated analysis of laboratory data.

Learners will investigate the three-phase and two-phase states of soils and calculate their density, moisture content, void ratio and degree of saturation. They will investigate the characteristics of fine grained soil, their deformation and influence of seepage on effective stress. They will learn the common methods for the determination of shear strength, compressibility and permeability according to the current codes of practice. Learners will know the current techniques for the acquisition of soil samples for laboratory testing and common methods of in-situ testing.

Learning Outcomes

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

1. *Explain the nature of common rocks and their mode of formation;*
2. *Explain the properties of soils and their classification;*
3. *Establish the design parameters for soils;*
4. *Use the techniques of soil investigation on site and methods of testing soil in laboratory.*

ETPRJ-506-1519: Group Project in the Construction Industry

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

This is a practice based unit which will develop learners' skills in terms of the units covered so far. This unit will enable the application of knowledge, understanding and skills developed in other units and where possible also uses experiences that are developed through work in a design office.

This unit is designed to bring together small groups of learners into teams so that they can coordinate their individual skills and abilities. The importance of working as team and of keeping adequate records will be an important skill which will be well practiced throughout. The scheme of work should give individual learners an opportunity to take responsibility for their contribution to the outcome and demonstrate their ability to work as a team.

The project brief will include an agreed timescale with defined working constraints and parameters, with the goals leading towards an acceptable and viable solution to the agreed brief. The importance of the project's evaluation and the skills required to do so will be formulated in this Unit.

The basic skills required to produce a complete project will be tackled in this Unit such as the importance of design briefs, client ideas, surveys, preliminary investigations, sketches and so on. The architectural and structural aspect of the project will be tackled in detail and related to the theoretical units covered in other subjects.

Learning Outcomes

On completion of this unit the student will able to:

1. *Devise a project scope and a scheme of works for the project;*
2. *Begin the implementation of the scheme of work for the project;*
3. *Prepare the group project;*
4. *Present the group project drawings and documentation.*

ETMGT-506-1510: Management Principles and Application for Construction and the Built Environment

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

The unit aims to develop an understanding of the principles of management in construction and the built environment sector.

Students will understand how management theories have evolved over time and how these have been applied in the construction sector. Students will also learn about the management functions and techniques required to manage construction organisations.

Organisation within the construction sector have variety of sizes and types. Students will learn about their structures as well as what happens when teams are formed to work on a specific project.

Managers have to produce various types of documentation which students will appreciate and will produce some of these for a given project. Construction sector is subject to change: legislation; standards; working practices; and technology. Project managers have to manage such changes and hence part of the unit deals with this aspect.

Students will learn about various forms of contract and procurement routes. They will be able to understand the contractual relationships among the parties to a contract in terms of obligations and responsibilities. Students will develop skills to make an informed decision on selecting suitable form of contract and procurement route for a given project.

Learning Outcomes

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

1. *Examine principles of management;*
2. *Analyse construction organisations;*
3. *Apply management principles;*
4. *Review contracting and procurement methods.*

ETCNS-506-1527: Measuring, Tendering and Estimating for Construction and the Built Environment

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

This unit will allow learners to demonstrate their knowledge and understanding of estimating and tendering within the construction industry. It has been devised to help learners to demonstrate an ability to apply established measuring, estimating and tendering concepts to the construction industry, including the format and interpretation of final quantities from dimensions and descriptions in bills of quantities, the basic information required to produce a tender, calculation of unit rates and all-in rates, through to producing a tender and the influence of contractual arrangements for a construction project.

The Unit is relevant to learners wishing to develop their previous knowledge of measurement, estimating and tendering concepts and principles: especially units in Level 4. On completion of the Unit learners will understand the principles that underpin construction and civil engineering projects, with knowledge of the personnel, procedures and documentation involved in the measurement, tendering and estimating processes. This Unit will provide the Learner with an understanding of selection of contractors, tender documentation and the scrutiny required, the gaining of further information (including site visits), the measurement process, bills of quantities, building up unit rates (including the importance of software) and the conversion of an estimate to a tender. The learner will also be able to apply, analyse and evaluate the effects and implications upon the tendering process of the differing range of project types and tender documentation. The learner will be able to outline the methods and techniques to derive costs, making use of available cost data and possibly software packages, developing the understanding, knowledge and skills required to produce them. The delivery of this unit should make regular and appropriate reference to the public sector procurement regulations – LN296 – 2010.

Finally, learners should have the underpinning knowledge and some understanding of the construction industry, construction technology and of measurement/quantification of building and civil engineering works. In addition, an appreciation of currently-used contract conditions would be beneficial.

Learning Outcomes

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

1. Explain the information required to produce a tender;
2. Apply the principles and techniques of estimating;
3. Formulate an estimate for construction operations;
4. Explain the tendering procedures and contractual arrangements.

ETPRJ-506-1520: Project Design, Implementation and Evaluation

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

The aim of this unit is to enable students to identify and explore areas of personal interest through a sustained effort which would develop skills to solve problems by applying knowledge and skills gained across the whole programme.

The students will develop skills in identifying projects which are relevant to their chosen pathway and select the one which is most feasible. Students will develop skills to investigate the given issues using recognized techniques and propose solutions. The variety of techniques could be used depending upon the type of project.

The students will then evaluate and present their findings. They will appreciate how to think in an innovative way while dealing with a variety of problems and then explore areas of improvement and further learning through a thorough evaluation of the outcomes. The students will be supported by an allocated supervisor/mentor who will have regular review meetings in addition to other forms of support such as information handling, research skills and academic support as necessary.

The project could be carried out by each individual student or as a group work in which case close monitoring of the performance of all students is required. The project work should be started when students have gained adequate knowledge and have developed skills to undertake project work which requires application of learning across the whole programme.

Learning Outcomes

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

1. *Develop a suitable project;*
2. *Design and implement a project plan;*
3. *Present the findings of the project.*

ETMGT-506-1515: Project Management for Construction and the Built Environment

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

The unit aims to develop an understanding of the practices of project management in construction and the built environment sector.

Students will be able to appreciate the role of a project manager in managing a project during various phases of design and construction by using the relevant tools. Students will be able to differentiate between the roles of a project manager while working for the client side or the design team and when working for a contractor or the contracting team. Students will learn about the requirements to become a professional project manager and will produce individual plans to achieve it.

Construction sector is subject to change: local, national and European legislation; Local, national and European standards; working practices especially multi-disciplinary teams; and rapid changes in the technology. Project managers have to manage such changes and hence part of the unit deals with this aspect. Change management is a transferable skill though is very relevant in the current industry climate as well as for the foreseeable future. Project managers are also responsible for ensuring good value for money for the client and the end user and require the necessary underpinning knowledge to achieve this which this unit aims to provide.

Learning Outcomes

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

1. *Explain the practice of managing construction projects;*
2. *Evaluate the role of a project manager;*
3. *Plan to become member of a relevant professional body;*
4. *Manage change and add value.*

ETPRJ-506-1521: Research Project

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

The aim of this unit is to enable students to identify and explore areas of personal interest through a sustained research effort which would develop skills to enquire independently using a structured approach. The unit will develop skills which are transferable as well as essential to be successful in any job roles within industry or academia.

The students will develop skills in developing research proposals by applying recognized research techniques. Students will develop themselves in the use of appropriate methodologies and application of statistical techniques and various software available. Students will develop a sound understanding in writing research proposals which are topical and are of relevance to the needs of the stakeholders.

Students will address any health and safety issues as well as ethical considerations arising out of the proposed research activities.

Though it is expected that the student will choose a research area which is in line with their programme of study, the research topic should be the one which draws upon learning across the programme and which is substantial enough to be considered adequate at this level.

Students will develop their projects by starting with a proposal identifying aims, objectives, possible hypothesis or research questions and methodology which will be subject to approval by the supervisor. Students will collect and analyse data and present their findings in an appropriate manner.

Learning Outcomes

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

1. *Develop a research proposal;*
2. *Carry out the research project;*
3. *Present the research findings.*

ETBSV-606-1506: Advanced Building Services

Unit level (MQF/EQF): 6

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

Building Services Engineering is an area of engineering relating to internal environment and environment impact of a building. It deals with design, installation, operation and monitoring of the mechanical, electrical and public health systems. These systems are required for the safe, comfortable and environmentally friendly operation of modern buildings.

In general, it is said that Building Services Engineering brings the buildings to life. Due to development of advanced technologies building services are developing rapidly over the past years following demanding comfort and regulation requirements.

Building services influence the architecture of a building. It plays a significant role on the sustainability and energy demand of a building.

Within building services engineering, new roles are emerging, for example in the areas of renewable energy, sustainability, low carbon technologies and energy management. With buildings accounting for around 50% of all carbon emissions, building services engineers play a significant role in combating climate change. In this module, the main objective is to present the importance of building services to the students with accent on good indoor air quality and rational use of energy.

The module introduces building services in general and their importance to modern buildings. It explains relation between Building Services and commissioning process of buildings and refers to the utilization phase of buildings. This module will focus on systems and equipment for heating, ventilating and air –conditioning including health and safety.

The main objective of this module is to provide a profound knowledge about importance of building services. The students will understand the different technical installations and the interrelation between building services and the commissioning process of buildings.

Learning Outcomes

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

1. *Analyse the importance of a good building envelope, its effects on building services and the requirements to meet EU directives;*
2. *Apply scientific principles to provide a safe and comfortable internal building environment;*
3. *Apply electrical principles in the design of building services;*
4. *Recognise building services technical trends.*

ETCNS-606-1528: Advanced Construction and Civil Engineering Technology

Unit level (MQF/EQF): 6

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

For the realisation of a successful building solution, it is indispensable that, from the very beginning of the project, formation of the structure system must be developed simultaneously with the architectural design and the shaping that enable specific properties of chosen structure system. In order to find optimal solutions from a multitude of structural possibilities, it is necessary that the engineer knows and respects the geometry and the properties of structural systems of various shapes and their technical and technological characteristics. The development of new structural systems and innovation in classical building constructions provide numerous new and different possibilities, which are characterized not only by varieties of interesting forms, but also excellent technical and technological characteristics and performances which make new systems much more rational comparing to the classical.

The program of the course, include lectures and practical studies (exercises and mini project work). Through lectures general principles of construction and shaping will be introduced to students and illustrated with examples and case studies. The practical studies include exercises and mini project part, which is structured in stages with a tight guidance concerning methods and study subject, but freedom in the choice of project theme. This frame is chosen to reach the aim of the mini project and at the same time let the students free to follow personal and professional interests.

Introducing the new possibilities of constructing and training a student to actively and creatively apply them is the main goal of the course, which studies the evolution of ideas, static-structural, technological, economic and engineering aspects of the different structural systems as well as ways of choices of system under given conditions. Synchronized building design and formation of its structural system assumes an active role of students in the study of literature, exploring new possibilities and combinations, and independent analytical choice of solution which optimally meet the set requirements.

The aim of the lectures is to provide an overview of advanced construction and civil engineering technology in structural design, a field that incorporates many different disciplines and a wide range of expertise. During first week lectures main principles of constructing and form-finding will be introduced to the students. The lectures in the second week will support and provide inspiration to the project work through the presentation of methods, diverse design processes and realized examples.

Learning Outcomes

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

1. *Apply structural concepts to design civil engineering projects;*
2. *Produce technical drawings of various structural elements;*
3. *Develop geometrical structural concepts to produce technical drawings;*
4. *Deliver a presentation of a mini design project;*
5. *Explain the process of a design proposal through technical drawings.*

ETMGT-606-1502: Advanced Project Management

Unit level (MQF/EQF): 6

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

Upon course completion students will be able to understand the activities of the professional project management. They have a good command of frequent services such as

- Organisation and communication;
- Building project tenders and work flow structures;
- Cost and fee calculations.

Learning Outcomes

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

1. *Identify and describe the fundamentals of project management and project phasing;*
2. *Analyse the aspects of project organization and time management;*
3. *Explain concepts behind effective cost estimation and cost management;*
4. *Discuss and apply project management tools such as time scheduling, network planning and the calculation of critical paths.*

ETMTS-606-1511: Building Materials

Unit level (MQF/EQF): 6

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

This module is designed for MCAST students at the Institute of Building and Construction Engineering following Construction Engineering degree. In this module students will have a general overview of any material which is being used for construction both local and in foreign countries. The building materials are not just a naturally occurring substance but also man-made materials. Students shall be also knowledgeable on the properties of building materials, the behaviour, the use in structural elements, testing and certifying of building materials.

Students shall be also knowledgeable on the properties of building materials, the behaviour, the use in structural elements, testing and certifying of building materials.

Learning Outcomes

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

1. *Knowledge on the physical and mechanical properties of different building materials used in construction;*
2. *Knowledge on testing methods of building materials;*
3. *Calculating the moisture content, carbon content, absorption capacity and porosity of a building material;*
4. *Analyse the testing results and design of new aggregate material for the use of concrete mix and testing sieving methods.*

ETMTH-606-1516: Mathematical Methods

Unit level (MQF/EQF): 6

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

The role of civil engineer has changed over the past few decades with the extensive use of new mathematical methods and computers both for design and calculation of structures, as well as for build and construction management. It is therefore necessary to introduce modern mathematical methods to civil engineering students, including numerical analysis of static and dynamic structural behaviour and advanced statistical methods.

This module is designed for those students following a Construction Engineering related degree. Since not every engineering situation related to the construction and built environment can be solved using analytical methods, numerical methods shall be presented so that the student is able to create determinable models of physical engineering problems, such as, structural problems, including but not limited to, bridges, dams, towers and buildings, with the appropriate constructive equations and boundary conditions, and using numerical methods. Such experience will be enriched with the use of computer simulations and software.

Additionally, students shall be also exposed to several statistical techniques, such as elementary probability theory, random variables, discrete and continuous distributions, hypothesis testing and linear regression.

Learning Outcomes

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

1. *Apply the finite element method to structural problems such as, bridges, dams, towers, and buildings;*
2. *Derive and apply theorems to solve statically and dynamically structural problems and managerial tasks using mathematical methods and software;*
3. *Apply numerical methods to engineering problems;*
4. *Apply harder statistical techniques to engineering problems.*

ETMGT-606-1514: Real Estate and Facilities Management

Unit level (MQF/EQF): 6

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

Real Estate, which is defined as “property of land and the buildings on it as well as the natural resources of the land including uncultivated flora and fauna, farmed crops and livestock, water and minerals”, needs to be maintained, especially in its utilization phase. Facility management takes care of the building during such phase together with other Property Management structures.

Facility Management is differentiated depending on its services. Technical Facility Management includes for example operation, maintenance or energy management. Commercial Facility Management includes among others property accounting and cost management. Infrastructural Facility Management is the generic name for floor space management, relocation management, cleaning services etc. The inventory of existing floor spaces concerning structure, composition and occupancy also fall under the responsibility of Facility Management. Key figures concerning the efficient use of spaces and potentials for savings of floor spaces are explained and determined.

No space is properly defined if the user requirements are not considered. The Facility Management connects the building with the user, its process, and the people operating in the building. Basic requirements are the supply of energy, water, heat etc. But there are also special requirements such as flexibility, comfort, operational safety etc. the Facility Management has to deal with.

Learning Outcomes

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

1. *Understand the importance of real estate and facilities management;*
2. *Understand the connection between user requirements and floor space management;*
3. *Understand the various tasks involved in the building management systems;*
4. *Understand and evaluate operating and life cycle costs;*
5. *Understand key terms for outsourcing and contract management.*

ETBSV-606-1511: Sustainable Buildings

Unit level (MQF/EQF): 6

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

Students will be introduced to the key elements of project development and redevelopment phases. They will also develop a critical awareness of factors affecting environmental sustainability and the evaluation of environmental impacts of buildings based on the whole life-cycle.

Learning Outcomes

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

1. *Implement forms and elements of project development;*
2. *Apply the concept of real estate evaluation;*
3. *Understand the sequential phases of a project lifecycle;*
4. *Analyse property market to predict future development;*
5. *Understand the concept of sustainable development in the built environment;*
6. *Understand the process of green building certification.*

CDWBL-506-1901: Work Based Learning 1

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

The aim of this unit is to provide learners reading a degree at MCAST with the opportunity for work-based learning (WBL) with a registered MCAST partner. WBL provides learners with real-life work experiences where they can apply academic and technical skills and develop their employability. Work-based learning deliberately merges theory with practice and acknowledges the intersection of explicit and tacit forms of knowing.

Learners will be doing this unit in the summer of their first year and they will have a follow up unit in the summer of their second year to provide them with experience as their knowledge of the subject increases. This will enable them to develop holistically in the area they have chosen enabling them to enter the world of work fully prepared and with experience to show in the sector they have chosen. This unit will assist learners in preparing themselves to take responsibility for their own learning in the workplace and to develop the necessary confidence and attitudes to carry out tasks responsibly in real life work situations. Learners are able to gain practical, hands on experience in their chosen field of study whilst producing a work based learning portfolio and journal demonstrating their achievements and learning experiences.

Learning Outcomes

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

1. *Evaluate the relationship between theory, college practice and their application and development in a real world work-based activity.*
2. *Evaluate critically own performance and learning experiences at the place of work through a reflective journal.*
3. *Set SMART objectives for own improvement following the reflective exercise.*
4. *Develop an action plan for personal and professional development to reach set objectives.*

CDWBL-506-1902: Work Based Learning 2

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 150

Unit Description

Work-based learning is an instructional method that provides a direct link between work experience and college based learning. A key element in such experiences, is the development of critical thinking. The ability to think critically is fundamental and is sought after by employers in various sectors. Critical thinkers will approach and solve problems methodically rather than by intuition or instinct. Critical thinking is important because it helps individuals and teams more effectively diagnose problems and identify possible solutions that aren't entirely obvious at first. WBL exposes learners to real world environments in order to promote and develop critical thinking. Apprentices, particularly at degree level, are also expected to take initiative and propose solutions to different problems that are faced day to day in various workplace settings. Through their apprenticeship experience, learners are expected to develop strong problem solving skills and use particular incidents as learning opportunities.

Learning Outcomes

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

1. *Examine the significance of critical thinking in degree apprenticeships.*
2. *Discuss the role of critical reflection within an experiential learning cycle.*
3. *Apply the IDEALS approach to effective thinking and problem solving.*
4. *Evaluate critical incidents and compile a critical incident journal.*

CDKSK-503-1907: English I

Unit level (MQF/EQF): 5

Credits: 3

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 75

Unit Description

This unit is intended to be run in the first semester of the first year of undergraduate degree programmes and consolidates prior knowledge, skills and competences in English reading, writing, listening and speaking by further strengthening the more academic functions of the language.

English I is intended to be an EAP (English for Academic Purposes), focusing specifically on improving learners' awareness of, and familiarity, with the core skills necessary for successful academic reading and writing in English, especially preparing them for the rigours of extended writing by research and the reading of academic sources of information.

Learners will become familiar with academic features of style and the principles and mechanics of good text structure. They will also learn how to consult, understand and use secondary material from academic sources within their field of study and effectively integrate it as part of a larger argument or body of work.

Learning Outcomes
Upon completing the unit, learners should be able to:

1. *Recognise the form, content and style of academic texts.*
2. *Use an academic style of writing when working on assignments and dissertations.*
3. *Reproduce secondary content by means of direct and indirect quoting methods.*
4. *Apply proper referencing conventions when citing secondary content.*

CDKSK-503-1908: English II

Unit level (MQF/EQF): 5

Credits: 3

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 75

Unit Description

This unit is intended to be run in the second semester of the second year of undergraduate degree programmes and consolidates prior knowledge, skills and competences of Academic English by further strengthening reading, writing, listening and speaking skills as determined by the rigours of pre-dissertation research.

English II is targeted at learners who have successfully completed their degree programme's first year and exposes undergraduate students to a higher level of critical reading and writing skills demanded in the second and final years of the degree programme. This usually involves the identification and select reading of academic texts, their review and their eventual use in a research proposal, dissertation and academic presentation.

It is also the objective of this unit to train learners to be more aware of, and proficient in, spoken Academic English as this becomes a key requirement at this level of studies.

Learning Outcomes
Upon completing the unit, learners should be able to:

1. *Evaluate academic sources of information when working on own dissertation.*
2. *Produce texts of an academic nature using appropriate language and style.*
3. *Communicate verbally in a manner which conveys proficiency of the subject being researched.*
4. *Respond effectively to key questions in relation to research in own field.*

CDKSK-604-1909: Entrepreneurship

Unit level (MQF/EQF): 6

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 100

Unit Description

The working definition of '**entrepreneurship**' employed in this unit is that stated by the European Commission: "*Entrepreneurship refers to an individual's ability to turn ideas into action. It includes creativity, innovation and taking calculated risk, as well as the ability to plan and manage projects in order to achieve objectives. This supports everyone in day-to-day life at home and in society, makes employees more aware of the context of their work and better able to seize opportunities, and provides a foundation for entrepreneurs establishing a social or commercial activity*" (Entrepreneurship in Vocational Education & Training, June 2009).

In line with this definition, the unit places an emphasis on fostering a mind-set that *entrepreneurship* is the vehicle that drives *creativity* and *innovation*. The learner will, amongst others, be encouraged to gain an insight as to how to investigate customer needs and markets to generate an innovative idea for a start-up; participate in the realistic simulation of the creation of a start-up[1]; create and pitch sections of a business plan, as well as draft sections of a business plan for an identified business idea.

The assessment of the unit is designed in a way to provide an opportunity for learners to strengthen transversal competencies which UNESCO highlights as necessary for the 21st century. These include intrapersonal skills, interpersonal skills, critical and innovative thinking, media and information literacy and global citizenship.

Learners with different backgrounds and experiences are required to contribute actively in a team to prepare the necessary work towards initiating a successful business venture.

[1] 'Doing effective entrepreneurship' is firmly grounded in theory, yet the *chalk and talk* delivery mode is not promoted in this unit. Rather, *actionable theory through practice* is strongly encouraged. *Realistic simulations*, limited not only to in-class activities such as *discussions* of the problems faced in the different phases of a business, especially in the process of commercialisation of innovative products and services, and *on-paper* creative management strategies, are considered essential.

In this unit, learners will become familiar not only with the main theories related to entrepreneurship and business start-ups but will have the opportunity to explore, interact and learn from a number of first-hand situations. The challenges of working with diverse team members will provide the learners not only with the possibility to look at entrepreneurship ideas from different perspectives, but also to come up with more creative, original and feasible solutions to challenges that will arise.

The practical and realistic element of the unit will allow learners to engage and interact with different stakeholders from industry and public institutions. This real-life interaction will provide the ideal set up to link theory with practice in the real world. Learners are encouraged to get out of their comfort zone and explore their entrepreneurial spirit by combining creativity, innovation and risk taking to help seize an opportunity, improve current situations or solve problems they encounter in the real world.

Learning Outcomes

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

1. *Understand the terms "entrepreneurship" and "entrepreneur" and techniques used to generate and evaluate business ideas.*
2. *Examine important considerations while developing a new business idea.*
3. *Apply business planning and control initiatives while developing a new business idea.*
4. *Contribute effectively in a team to develop a concept prototype of a feasible product/service idea.*

CDKSK-602-2105: Community Social Responsibility

Unit level (MQF/EQF): 6

Credits: 2

Delivery Mode: Fully Face-to-Face Learning

Total Learning hours: 50

Unit Description

This unit focuses on community and social responsibility skills and provides an opportunity for learners to better understand themselves and others, as well as establish goals in life. This unit is delivered through a combination of small-group sessions (it is suggested that the number of learners do not exceed 15 learners per class), reflections and community work. Community and social responsibility skills enable learners to understand their strengths and areas that need improvement while preparing them for life, employment and to become active citizens in society.

Moving away from traditional delivery of other units, learners will be empowered to take ownership of their learning process. Hence, this unit will be delivered through a combination of workshops, small-group sessions with mentors and various opportunities to reflect.

The first set of sessions will focus on the self, the ability to work independently and important values in life. The second set of sessions will focus on working with others, dealing with diversity and conflicts. Furthermore, at the end of the sessions, learners will be introduced to the importance of active citizenship in life.

Learning Outcomes
Upon completing the unit, learners should be able to:

1. *Identify personal goals through self-reflection.*
2. *Evaluate how collaboration with others can be more effective.*
3. *Explain the importance of giving and receiving feedback.*
4. *Contribute actively to make a difference in society.*

For further information, please contact us on information@mcast.edu.mt