MCAST

MCAST PROGRAMMES - PUBLIC INFORMATION TEMPLATE (FULL TIME)

Institute	Institute of Information and Communication Technology
Department	-

Programme Title	Advanced Diploma in IT (Multimedia Software Development)			
Course Code *To be filled in by Admissions Dept.*	IT4-O03-23	**If the programme includes a WBL element, How is it accredited?**	Not Applicable, does not include WBL	
MQF/ EQF Level	Level 4	**Type** *(refer to Appendix 1 for Parameters)* Qualification	**Awarding Body**	MCAST – Malta College of Arts, Science and Technology
Accreditation Status	Accredited via MCAST's Self Accreditation Process (MCAST holds Self-Accrediting Status as per 1st schedule of Legal Notice 296/2012)			
Mode of Delivery	Face to Face	**Duration***(Academic Years or Semesters)* 2 Years	**Mode of Attendance**	Full-Time
Total Number of Credits	120 credits	**Total Learning Hours** *(25 Total Learning Hours for each ECTS)* 3000 hours		
Target Audience	Ages 16 - 65	**Target Group** *(the type of learners that the educational institution anticipates joining this programme)* -		
Programme Fees	There are no fees applicable to Maltese and other EU Nationals (as will be evidenced by their Identity Document) Fees apply for other International Applicants… for fee information and any related updates it is best to communicate with MG2i International through applyinternational@mcast.edu.mt One may consider checking about possible eligibility or otherwise for any exemption from fees by contacting the relevant section within MEYR (Floriana) – or visit the servizz.gov.mt website here			
Date of Next Student Intake	For further information regarding upcoming student intake and applications time windows for same kindly click here			
Language of Instruction	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.			
Application Method	Applications to full-time courses are received online via the College Management Information System. Applicants can log-in using Maltese Electronic ID (eID) in order to access the MCAST Admissions Portal directly and create one's own student account with the identity being verified electronically via this secure service. Non-EID applicants need to request account creation though an online form after that they confirm that their local Identification Document does not come with an EID entitlement. . Once the identity is verified and the account is created on behalf of the applicant, one may proceed with the online application according to the same instructions applicable to all other applicants. For more information about how to apply online for a course at MCAST, please visit:			

Information for Non-EU Citizens	Non-EU candidates require a study visa in order to travel to Malta and join the course applied for (on a Full Time delivery mode). For further information re study-visa please access https://www.identitymalta.com/unit/central-visa-unit/. Further information International / TCN applicants should take note of before requesting to being considered for a programme of studies at MCAST, can be obtained through the respective FAQ found on https://mcast.edu.mt/important-information/
IMPORTANT note to Non-EU Nationals / TCNs	In instances where a TCN is applying for an MCAST programme of studies which includes Apprenticeship / Placement / Internship, it is the applicant's responsibility to check with the relevant Maltese Authority whether one would be eligible to have the necessary permits to be able to carry out the accredited Apprenticeship / Placement / Internship, success from which is expected in order to be able to successfully complete the selected programme of studies. Further information can also be obtained through the respective FAQ found on: https://mcast.edu.mt/important-information/
Address where the Programme will be Delivered	*MCAST has four campuses as follows:* **MCAST Main Campus** Triq Kordin, Paola, Malta *All courses except for courses delivered by the Institute for the Creative Arts, the Centre of Agriculture, Aquatics and Animal Sciences and the Gozo Campus are offered at the Main Campus address (above).* *Courses delivered by the Institute for the Creative Arts, the Centre of Agriculture, Aquatics and Animal Sciences, or the Gozo Campus, are offered in one of the following addresses as applicable:* **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 *In the case of courses delivered via Online Learning, students will be following the programme from their preferred location/address.* *Programmes delivered via Blended Learning, and which therefore contain both an online and a face to face component shall be delivered as follows:* o Face to Face components – as per above address instructions o Online components – from the student's preferred address.

Course Description *(Refer to Programme Specification)*	The world wide web is one area that is growing fast in terms of the skills needs of companies. Multimedia is the incorporation of text, sound, graphics, animation, still images and video in conjunction with computer technology. This course will provide the learners with the core software development skills along with the necessary knowledge for multimedia artefact development, manipulation and integration. The first year of this course will be common for all learners following Advanced Diploma studies. During the second year, learners will focus on Multimedia and Software Development oriented subjects such as game development and mobile application development. This is a technical course for learners with an artistic inclination.
Deskrizzjoni tal-Kors *(Refer to Programme Specification)*	Il-world wide web huwa settur li qed jikber b'mod rapidu fir-rigward tal-ħiliet meħtieġa mill-kumpaniji. Il-multimidja tinkorpora t-test, is-sound, il-grafika, l-animazzjoni, l-immaġnijiet fissi u l-vidjo flimkien mat-teknoloġija tal-kompjuter. Il-kors jipprovdi lill-istudenti l-ħiliet ewlenin fl-iżvilupp tas-softwer, flimkien mal-għarfien neċessarju għall-iżvilupp, il-manipulazzjoni u l-integrazzjoni tal-artifatti tal-multimidja. L-ewwel sena ta' dan il-kors tkun l-istess għall-istudenti kollha li jkunu qed jistudjaw biex iġibu l-Advanced Diploma. Fit-tieni sena l-istudenti jiffokaw fuq suġġetti orjentati lejn il-Multimidja u l-Iżvilupp tas-Softwer, bħall-iżvilupp tal-logħob u l-iżvilupp ta' applikazzjonijiet tal-mobile. Dan huwa kors tekniku għal studenti b'inklinazzjoni artistika.
Career Opportunities:	Junior Front End Developer, Junior Game Developer, Junior Application Developer, Junior Mobile Application Developer
Entry Requirements *(Refer to Prospectus / Course Page on MCAST website)*	Internal Progression Route…. MCAST Diploma in IT or MCAST Diploma in iGaming or Any MCAST Level 3 Diploma, whilst being in possession of the compulsory subjects as indicated hereunder OR 4 SEC / SSC&P or equivalent with a Pass Grade / Level 3 Compulsory: Mathematics AND Compulsory: One subject from Computer Studies OR Physics OR Information Technology OR IT -VET OR ICT C3 pass grade at level 3
Other Notes related to this Programme, and which are to be taken note of	In view of Entry Requirements for course, ECDL or ICDL Certification, are not considered as a replacement to any part of the pool of Compulsory Subjects
Programme Learning Outcomes *(Refer to Programme Specification)*	At the end of the programme the learner will be able to: 1. Identify the appropriate software infrastructure for a given requirement. 2. Understand the core design and mathematical concepts needed for multimedia software applications. 3. Design multimedia content prepared for integration with software systems. 4. Implement media rich software application.
Teaching, Learning and Assessment Procedures	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 pertaining to this Programme's MQF/EQF level available at: link https://www.mcast.edu.mt/college-documents/, apply.
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. All full time 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 (where applicable) are graded on a Pass/Fail basis only. Some units which follow industry standards and regulations may also be graded on a Pass/Fail basis as per programme regulations referred below. Detailed information regarding the grading system may be found in the Programme Regulations pertaining to this programme's MQF/EQF Level available at: https://www.mcast.edu.mt/college-documents/ (Refer to DOC 003, 004 and 005)	
Exit Point (where and as applicable)	Where a student will not make it to the Final Certification achievable from this Programme of Studies (as per Programme Regulations), one might wish to look into Exit Point possibilities as may be applicable to this programme for studies. Further information, is available at https://www.mcast.edu.mt/college-documents/, kindly refer to *DOC 077 Procedure for the processing of Claims for Certificates at Interim Exit Points.*	
Contact details for Further Learning Opportunities	The MCAST Career Guidance Team, offers the service of qualified and experienced Career Advisers who will be very willing to discuss with potential applicants the course which best achieves one's career ambitions, as well as exploring one's education route, or similar. **MCAST Career Guidance** Tel: 2398 7135/6 Email: career.guidance@mcast.edu.mt	
Regulatory Body/ Competent Authority Contact Details *(where applicable - in the case of a programme leading to Regulated Profession)*	Not Applicable	

Programme Structure	Unit Code	Unit Title	ECTS	Year	Semester
	ITDBS-406-1501	Database Concepts and Design	6	1	A
	ITSYS-406-2003	Computer Systems	6	1	A
	ITSFT-406-1501	Fundamentals of Scripting	6	1	A
	ITMMD-406-1501	Introduction to Multimedia Design	6	1	A
	ITSFT-406-2000	Logic Programming	6	1	B
	ITNET-406-2002	Networking Concepts	6	1	B
	ITWEB-406-1501	Website Design	6	1	B
	ITSYS-406-1503	Embedded Systems	6	1	B
	CDKSK-406-2319	English	6	1	Year
	CDKSK-406-2320	Mathematics	6	1	Year
	ITMMD-406-2004	Introduction to Object Oriented Programming	6	2	A
	ITSFT-406-2002	Programming for Computer	6	2	A

		Games			
	ITSFT-406-1506	Client Side Scripting	6	2	A
	ITDSN-406-2003	Graphic Design	6	2	A
	CDKSK-402-2324	Community Social Responsibility	2	2	A
	CDKSK-404-2325	Entrepreneurship Essentials	4	2	A
	ITSFT-406-2001	Introduction to Mobile Applications Development	6	2	B
	ITSFT-406-2003	Motion Graphics	6	2	B
	ITDBS-406-1502	Relational Databases	6	2	B
	ITPRJ-406-2011	Project	6	2	B
	CDKSK-406-2326	Critical Thinking	6	2	Year

Allocation of Total Learning Hours (per Unit)	The total learning hours required for each unit or module are determined as follows:			
	Credits (ECTS)	Indicative contact hours[1]	Self-Learning and Assessment Hours[3]	Total Student workload (hrs)[2]
	1	5 – 10 hrs	20 - 15 hrs*	25 hrs
	2	10 – 20 hrs	40 - 30 hrs*	50 hrs
	3	15 – 30 hrs	60 - 45 hrs*	75 hrs
	4	20 – 40 hrs	80 - 60 hrs*	100 hrs
	6	30 – 60 hrs	120 - 90 hrs*	150 Hrs
	9	45 – 90 hrs	180 - 135 hrs*	225 hrs
	12	60 – 120 hrs	240 - 180 hrs*	300 hrs
	Note: The 'Self-Learning and Assessment Hours[3]' amount to the difference between the 'Indicative Contact Hours'[1] and the 'Total Student Workload'[2]			

APPENDIX 1

MINIMUM CREDITS FOR QUALIFICATIONS AT DIFFERENT LEVELS

MQF Level	Minimum ECTS Required for a Qualification*
8	
7	30
6	180
5	30
4	30
3	60
2	60
1	40

*Programmes assigned fewer ECTS than indicated will be classified as Awards.

Reference: Fig.1: p48, Malta Further and Higher Education Authority (MFHEA) (October 2024). Referencing Report, 5th Revised Edition.

APPENDIX 2

EXAMPLES OF QUALIFICATION TYPES AT A SPECIFIC MQF LEVEL

MQF Level	Examples of qualification types at a specific MQF level (The list in this column is not exhaustive)	Number of ECTS *
8	Doctoral Programmes:	
	PhD	N/A
	Professional Doctorate	180
7	Master's Degree	90
	Postgraduate Diploma	60
	Postgraduate Certificate	30
6	Bachelor's Degree	180
	Bachelor's Honours	240
5	Undergraduate Higher Diploma	90
	Undergraduate Diploma	60
	Undergraduate Certificate	30
	VET Level 5	60
4	Advanced Diploma	120
	Pre-Tertiary Certificate	30 - 60
	MATSEC Matriculation Certificate (Advanced and Intermediate)	N/A
	VET Level 4	120
3	Certificate	60
	MATSEC Secondary Education Certificate	N/A
	VET Level 3	60
2	Foundation Certificate	60
	MATSEC Secondary Education Certificate	N/A
	VET Level 2	60
1	Introductory Certificate	40
	VET Level 1	40

* Programmes assigned fewer ECTS than indicated will be classified as Awards.

Reference: Fig.2: p48, Malta Further and Higher Education Authority (MFHEA) (October 2024). Referencing Report, 5th Revised Edition.

ITDBS-406-1501: Database Concepts & Design

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

Today, in a challenging and fast paced environment, businesses and organizations need to be able to make quick responses in order to remain competitive and meet information demands. Databases are central in supporting core business processes and information systems and therefore need to be as efficient and accurate as possible.

This unit is relevant to learners wishing to develop a sound understanding of the features and functions of databases, and skills in designing and building an efficient database to meet specified requirements and provide accurate information. The unit will introduce the background database concepts and key design methods integral to creating a working database with validity and integrity. No previous competence with a database is assumed.

Learners should develop the underpinning knowledge and understanding through the database design and build process to enable efficiency and accuracy in terms of both structure and data. Learners will design and construct relationships through the process of normalisation, identifying entities and attributes, applying appropriate data types and other properties for implementation within a database application. Database structures will be enhanced by the learner using a variety of software and SQL features that allow for the creation and alteration of tables.

On completion of the unit learners will be familiar with essential database theory and design methods. Learners will be able to implement these within database application software and use a range of SQL techniques to manage the database structure.

Learning Outcomes

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

1. *Explain the features of a database and a database management system (DBMS).*
2. *Explain and use database design methods to create a relational database structure.*
3. *Implement a relational database design with the use of structured query language.*

ITSYS-406-2003: Computer Systems

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

The purpose of this unit is twofold: to understand the main components of a computer system including the principal aspects and functions of both the hardware and the software components. Secondly it addresses the general skills to recommend the appropriate systems for business purposes which includes the setup, testing and the maintenance of a system.

The unit will start off describing different hardware components and their application of use. It will then go into the different flares of operating systems and illustrate the use of some. Software utilities will be mentioned and a few examples will be given.

Computer Security is an integral part in computer systems and some recommendations will be pointed out.

Learners will be assessed on all of the above and they will also understand the true meaning of computer systems. This involves having the student appreciate the skill set required to be knowledgeable in computer systems and relate to several technical terminologies.

The specific objective of this unit is that the learner undertakes a logical / correct sequence of what computer systems are and be able to recommend different setups to a business environment.

Learning Outcomes

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

1. *Explain the main components of a computer system.*
2. *Evaluate the scope of operating systems and the different uses.*
3. *Demonstrate different types of software utilities.*
4. *Apply knowledge to recommend, setup and configure systems.*

ITSFT-406-1501: Fundamentals of Scripting

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This unit has been designed to teach learners the fundamentals of scripting in the context of procedural paradigm irrespective of framework or delivery platform. The development of procedural code is still at the core of many embedded systems even when it comes to event driven systems and object oriented platforms.

This unit enables learners to become familiar with the underpinning concepts of scripting languages and assumes no prior knowledge of scripting. An introduction is given to the concepts of programming, particularly as contrasted with scripting. A scripting language is introduced and the basic sequence such as variables, conversions, expressions, statements and functions will be covered.

Following these basics, conditionals and iterations will be introduced to cover the basic structure of a procedural programming. For data storage, strings and files will be covered with particular focus on file manipulation – a common task in automation scripts.

Learners will use a structured approach to the design and development of scripting applications, ensuring the solution is well documented and thoroughly tested against the original user requirement.

This unit will set the stepping stone for the Embedded System unit which will guide learners through the basis of common system architectures, Operating Systems (OS) management, I/O interfaces and control.

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

1. *Understand the features of a scripting language in context of procedural programming paradigm.*
2. *Use the tools and techniques of a scripting language to build console applications.*
3. *Design and develop console applications using a scripting language for a specific use.*
4. *Demonstrate the use of console applications using a scripting language for a specific use.*

ITSFT-406-2000: Logic Programming

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This unit has been designed to teach learners the basic programming techniques to build an application. It is a skills-based unit and is designed to allow the learners to understand and apply the necessary skills to create interactive applications.

This unit presents the theory and practice of programming languages in different scenarios. This is a practical unit and the focus is to introduce and revise basic programming techniques. This unit is delivered using Digital Game Based Learning techniques. This will motivate the students to learn more in a fun and interactive environment.

The first part of the course will introduce basic concepts used in programming languages such as variables, loops, functions, events, arrays and objects. After learning the basics, the students will learn how to create interactive applications using these methods.

Flowcharts are also introduced as a diagrammatic representation of algorithms in order to help learners think logically when building applications. During this unit, learners will be introduced to different flowchart symbols and techniques to build a working application.

Learners will also be introduced to debugging and testing techniques to minimise logical errors in their applications. They will be assisted to understand how to use debugging techniques such as watch on variables, breakpoints, step-in and step-out, etc.

Once leaners complete this unit, they will be ready to proceed and learn to build more advanced applications.

Learning Outcomes

On completion of this unit the learner will be able to:
1. *Plan and develop logic for an application.*
2. *Use and explain the features and techniques of a programming language.*
3. *Construct and apply algorithms to solve simple programming problems.*
4. *Show the ability to prepare an application for release.*

ITNET-406-2002: Networking Concepts

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This is a theoretical-based unit during which learners will be exposed to basic concepts on data networking as a foundation to other network-related units.

Learners will appreciate the reasons behind the growth of networks, with a quick look at the origin of PC networks and the Internet, and some of the benefits of networks. The role of network standards is also discussed with an overview of the major standards bodies. The Open
Systems Interconnection Reference model (the OSI model) is then discussed in detail. Learners will be exposed to the concept of protocol layering in order to better understand the functions of the OSI stack. The differences between connection-oriented and connectionless services are explained as part of the discussion of the different levels of network quality-of-service required for different Internet applications (ex. SMTP in Email, VoIP, HTTP etc.)

This unit will also cover TCP/IP fundamentals and the two basic protocols from which it takes its name, Transmission Control Protocol (TCP) and Internet Protocol (IP). Learners will understand the TCP, IP, UDP datagrams and TCP/IP addressing. Address assignment is also covered considering that this is a critical part of network design and deployment. Learners will understand how IP addresses are structured, how name resolution and human-recognizable hostnames are resolved to numeric addresses using DNS. The evolution of IPv4 to IPv6 to cater for more flexibility in IP addressing schemes will also be covered.

The unit will also cover practical aspects of networking concepts. Learners will be able to configure TCP/IP properties and make use of TCP/IP utilities for network trouble-shooting. Learners will also make use of applications such as wire-shark in order to inspect data packets.

Throughout the unit, learners will be provided with hands-on experience on selected aspects, and discussions will be facilitated, prompting the learners to brainstorm ideas based on the learning outcomes. On completion of the unit, learners would be able to apply theory into practical applications and have a solid foundation for subsequent units related to data networking.

Learning Outcomes

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

1. *Explain the Use of Networks, Network Types and Architectures.*
2. *Explain the Role of Network Protocols and Models.*
3. *Familiarise with the Transmission Control Protocol / Internet Protocol (TCP/IP).*
4. *Configure and trouble-shoot TCP/IP.*

ITWEB-406-1501: Website Design

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

Effective website design is central to successful website production. Designers need to present an appropriate image to consumers and maximize opportunities to capture and retain interest. Sites need to be accessible to all and attention also needs to be given to usability issues such as navigation to enable users to access all aspects of a site with ease. Web users will quickly navigate away from poorly designed sites.

This unit follows the development of a website from initial requirements through design, build, test and review.

Learners will develop skills in using design techniques, together with hypertext markup language (HTML) and cascading style sheets (CSS) and build an interactive website using JavaScript. Learners will prepare the site for publication on the internet. This will require learners to be confident in carrying out more advanced techniques and to have the underpinning knowledge and understanding to test functionality, ensuring the site is fully operational in different browser environments and is compliant with copyright and accessibility guidelines

The unit is relevant to learners wishing to learn and develop skills which can be used to provide website solutions in a variety of contexts.

Learning Outcomes

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

1. *Prepare a website with the latest mark-up language.*
2. *Design a website using the latest styling technology.*
3. *Create interactivity in the website using JavaScript and a JavaScript Framework.*
4. *Upload, test and review created website.*

ITSYS-406-1503: Embedded Systems

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This unit is a continuation of the unit Fundamentals of Scripting. This unit has been designed to teach learners the knowledge, skills and competence gained from the 'Fundamentals of Scripting' unit and put it into practice by implementing the constructs in an embedded system. This is a skills based unit and will allow learners to demonstrate they have the necessary skills to be able to understand and work with an embedded system.

The unit will guide learners through the basics of common system architectures, Operating Systems (OS) management, I/O interfaces and control. Learners will use the scripting language concepts learned in the 'Fundamentals of Scripting' unit and as a consequence should be able to operate effectively at more than a basic level of competence before commencing this unit.

An introduction is given to the embedded system covering its major hardware components, installation of the Operating System (OS) and basic configurations.

Following these basics, an introduction to scripting commands such as but not limited to: accessing files, processes and permissions will be covered with a particular focus on administration of the Operating System (OS) with command line.

Scripting language specific features are also revisited from the unit 'Fundamentals of Scripting', including the basic constructs, functions and modules. A number of practical tasks can be associated with this module, including programming digital input/ output, blinking LED, face detection and scheduling commands with cron.

During this unit, learners will be able to create small projects such as a cron lamp timer, simple soundboard and photo booth.

Learning Outcomes

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

1. *Illustrate and develop the fundamental components of an embedded system.*
2. *Produce and describe a simple embedded system proposal for a specific use.*
3. *Prepare and configure hardware and software to manage an embedded system.*
4. *Manipulate and develop a simple embedded system solution for a specific use.*

ITMMD-406-1501: Introduction to Multimedia Design

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This unit is designed to introduce the learner to the concepts and principles applied to the design and development of simple yet interactive multimedia applications. The unit will appeal to those with an interest in animation, computing, sound or graphic design. Learners will develop a methodology of working which will take them through the stages of development from analysis and planning through to design and finally the implementation and initial testing of a multimedia product to an advanced prototype state. Learners are prepared for this by providing them with the knowledge needed to carry out this type of development. In addition, they will gain an understanding of current terminology and the wide and varied applications of multimedia.

This is a valuable unit for learners since multimedia is used everywhere from educational applications and product advertising, to games and entertainment. Sound, animation, video and graphical art are expected to be components in most applications, therefore it is important to know how and when to apply these components to enhance the user experience. The learner will be introduced to user-orientated design and prototyping and also to Graphical User Interface (GUI) features and design conventions followed to encourage intuitive interaction.

Following planning and design, the learner will go on to develop a small application; they will use storyboards and mood boards to assist the planning and will learn to integrate multimedia components into the final product. The final product will be developed to an advanced prototype standard.

On completion of the Unit learners will understand the processes involved in the design and development of a small interactive multimedia application. They will be able to develop component parts such as audio, animation and graphics. They will learn about interactivity and user-orientated design, and will apply their learning to develop a small and potentially interactive prototype application.

Learning Outcomes

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

1. *Plan the multimedia components for a small interactive application.*
2. *Use appropriate tools and techniques to develop the design of the application.*
3. *Design the application using a user-orientated approach.*
4. *Build an advanced prototype multimedia application in accordance with the design.*

ITMMD-406-2004: Introduction to Object Oriented Programming

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

Object-oriented programing can be seen as the tool that has enabled software to grow exponentially more complex. The object-oriented paradigm has helped engineers to better design and prototype software, to increase flexibility and also to increase the quality of the software produced.

Throughout this unit the learner will be guided to create dynamic models and experience the object-oriented paradigm through software re-use. This unit aims to integrate the diverse areas of knowledge needed to create successful multimedia-based projects using an object-oriented approach. By the end of this unit the learner will appreciate that the required functionalities of a multimedia project can be represented into an object-oriented model that can subsequently be programmed.

The learner will be introduced to the basic concepts of software development and henceforth of the basic notions of object-oriented programming such as inheritance and encapsulation. Simple UML will be used a notational diagram for describing the relationships between objects. At this point the knowledge gained thus far will be used to design and implement multimedia based object-oriented applications.

Finally, learners will be guided on how to debug and test the code that they have developed through a series of testing strategies and with the assistance of the debugging tools provided by the IDE being used.

Learning Outcomes

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

1. *Demonstrate a good understanding of the object-oriented programming fundamentals.*
2. *Design multimedia-based applications using an object-oriented approach.*
3. *Implement multimedia-based applications using the concepts of object-oriented programming.*
4. *Resolve errors in object-oriented code through effective code evaluation and testing.*

ITSFT-406-2001: Introduction to Mobile Applications Development

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

Mobile applications design and production is a complex and challenging skill set. Developers require the ability to select suitable application technology and demonstrate an understanding of the benefits, cost, context, user restrictions, target device and the industry structure when developing web based applications for hand held devices. This unit will give the learner an introduction to the theory and development of web based mobile applications.

This is both a theory and practical based unit and will allow learners to demonstrate they have the necessary knowledge and understanding of mobile applications (web based and target device based) development to be able to identify the features affecting the production of applications. Learners will be given an introduction to the understanding of target device, industry restraints and conditions to gain an understanding of user experience and production requirements in the development of web based mobile device applications.

This unit is relevant to learners wishing to further develop their knowledge of application design and development for mobile handheld devices such as tablets, smart phones and laptops.

This unit is aimed at; interface designers, graphic designers, visual designers, programmers, interactive designers and information architects.

Learners will carry out introductory evaluations of the effectiveness of mobile applications on a range of target devices and will evaluate their affecting factors, usability and the user experience.

Finally, learners should have the principal knowledge and understanding of development and should feel confident to extend their experience in the design and production for the mobile user experience.

Learning Outcomes

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

1. *Describe the current technology, features and uses of web based applications on mobile devices.*
2. *Design a web based application for a mobile device.*
3. *Produce a Web Based Application for a mobile device.*

ITSFT-406-2002: Programming for Computer Games

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This is a skills based unit, and will allow learners to demonstrate that they have the necessary skills to be able to produce computer games in a programming language. Learners will develop an understanding of programming principles as applied to computer game development.

Learners will first demonstrate their knowledge of game programming by selecting an appropriate game engine and programming language for implementation of a particular game design, and justify their choices with regard to factors such as platform compatibility, available features, and so on. At this pre-production stage of the game development process, the learner will also consider the state-driven nature of the game being developed, and design a state machine for implementation.

The learner should understand factors such as as the file format, compression, and resolution of the various types of assets used as content in games, such as graphics, (e.g. tiles, sprites and/or sprite sheets, backgrounds, or user interface elements) audio, (e.g. sound effects, ambient sounds, voice, or music) 3d models, fonts, and so on. The learner should also, on completion of this unit, be able to prepare assets which are suitable for the production of a game design, including at least 2d graphics, and sounds.

This unit, however, primarily provides the learner with the opportunity to learn and apply programming skills to a game development project. At this level, a simple 2d game with sound should be suitable. The learner should take into account the capabilities of the target devices, such as resolution, input devices available, and screen orientation / shape.

Finally, learners will be able to complete a post-production phase by deploying, publishing, and sharing their completed game on suitable distribution media for their target platforms.

Learning Outcomes

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

1. *Select a game engine and programming language for a given task.*
2. *Prepare assets appropriately for the development of a given task.*
3. *Build a simple computer game using 2D graphics, sound, and input devices.*
4. *Deploy, publish and share a simple computer game.*

ITSFT-406-1506: Client Side Scripting

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This unit will allow learners to demonstrate they have the necessary knowledge and ability to create dynamic web based applications. They will become proficient in using client-side scripting techniques combining JavaScript, CSS, HTML 5, and JQuery. Current user expectations are for fast, interactive and responsive web applications, thus the need for skills in client-side scripting techniques is crucial. This is a practical unit with opportunities for the learner to practice the scripting concepts they have learned.

Learners will be able to apply programming concepts such as data-types, selection, iteration, functions and events to scripts. Additionally, they will be exposed to the web document hierarchy such as windows and form elements, and the potential for interactivity that can be applied to those components. Prior knowledge of HTML would be an advantage before commencing this unit; however, the basics can be acquired as the unit progresses. Learners will gain an understanding of Asynchronous JavaScript and XML (AJAX) and the alternative and continually developing JavaScript Object Notation (JSON).

Increasingly web applications are becoming larger and more complex and there is demand for these sites to be accessible via mobile devices; therefore the need for client-side scripts and AJAX/JSON and JQuery will continue to grow. The Unit is relevant to learners wishing to broaden their web development and programming skills as well as increasing their knowledge of mobile web applications that are responsive and interactive.

On completion of the Unit learners will understand the need for client-side scripts, as well as developing the skills required to produce dynamic, interactive and responsive web content. They will gain an understanding of the current technologies involved with web content on the client, and also the methods of exchanging data between browser and server but the focus will be largely on scripts running on the client and the programming concepts needed to make the data exchange efficient.

Learning Outcomes

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

1. *Explain the necessity for client-side scripting.*
2. *Demonstrate the use of programming elements associated with client-side scripting languages.*
3. *Use client-side scripting to enhance the functionality of a web application.*

ITSFT-406-2003: Motion Graphics

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

In this unit learners will be able to create and manipulate motion graphics through advanced animation techniques and video compositing methods. This unit involves advanced use of shape and text animations together with effective tools to enhance the development of motion graphics.

Through the development process of motion graphics the learner will learn tools and techniques used for: planning, creating and rendering of motion graphics.

The planning process involves: brainstorming, scripting, moodboards and storyboarding techniques.

During the creation phase the learner will be provided with adequate equipment to apply animation and video compositing techniques. Such techniques involve: masking, chroma keying, basic rigging strategies, parenting, motion tracking, key framing and time remapping.

During the rendering process, the learner will be able to identify the best set properties for a motion graphic before distribution, considering sound, colour, framerate, file formats, resolution and file size.

By applying these processes to practical exercises, students will learn skills in motion graphics, compositing and digital production techniques.

Learning Outcomes

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

1. *Identify the properties of motion graphics and video compositing.*
2. *Plan and organise composited digital videos.*
3. *Apply sound and advanced animation techniques.*
4. *Demonstrate compelling motion graphics through effective use of animation techniques.*

ITDBS-406-1502: Relational Databases

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

Today, every business and organization need to have some form of IT system in order to function efficiently and be able to cope with competition. Databases are therefore a necessity in order to persist the data generated on daily basis. Data retrieval from these data sources is a core component in every type of information system.

Relational Databases is a unit which is relevant to learners wishing to develop the skills required to carry out different database operations through the use of Structured Query Language (SQL). SQL is considered as the official language used by database and information system developers to manage and interrogate the information held in Relational Database Systems. The unit will introduce a number of different querying techniques to add, update, remove and retrieve data. The content of the unit is practical in nature and provides the knowledge and skills to create reliable, efficient and effective SQL commands. The learner should be able to generate reports which output all the information indicated by the user, in order to meet the business requirements.

This unit will not require the learner to have any previous knowledge of SQL. It is designed to be delivered as a continuation of Database Concepts & Design as part of the Extended Diploma in IT (Software Development) although it may also be delivered as a standalone unit.

On completion of this unit, learners will be familiar with the majority of the basic querying concepts. Learners will be able to make use of different querying techniques to handle data stored in a DBMS.

Learning Outcomes

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

1. *Create basic queries to manage data held in a relational database management system (RDBMS).*
2. *Use different functions within SQL to meet user requirements.*
3. *Use different querying techniques to retrieve more complex user requirements.*

ITDSN-406-2003: Graphic Design

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This is a skills based unit and will allow learners to demonstrate they have the necessary knowledge of graphic design to be able to put this into practice within the framework of different design projects. Learners will be introduced to the difference between print and screen design then shown the application of these in a variety of graphic design scenarios. Learners will gain an understanding of bitmap and vector graphics and how these are applied in graphic design. It would be advisable that learners have knowledge of colour, typography and layout concepts and an understanding of how these elements differ within the area of graphic design and interactive media depending on the project. For this reason, it would be advisable for learners to have completed or be studying the Theory of Design and Graphic Design unit.

The Unit is relevant to learners wishing to further develop their knowledge of graphic design so that they might apply this to other units within the course and also to develop an understanding of the graphic design industry in general. On completion of the Unit, learners will understand the principles used in graphic design projects and how these form a basis for working within the design industry. This Unit will provide the Learner with the ability to use graphic software applications in order to create interesting and practical solutions to a wide variety of projects. Other influences such as the use of colour in design and typography will also allow a better understanding of how these can be developed and used alongside layout. The learner will also be able to use synthesis between graphic applications and multiple scenarios in order to integrate their skills and knowledge.

In this unit, learners will become familiar with the basic tools and techniques of digital graphics software used to produce images for a range of media. These techniques form the basis of the development of graphics for print and screen design including: adverts, magazine pages, websites, DVD interfaces, interactive digital publishing and animations. This unit is therefore fundamental to the development of digital design skills.

Learners will carry out practical tasks and present these to the assessor who can feedback and advise on the success of each task. It will also be advisable to give group presentations to encourage sharing of knowledge and to help develop confidence in presentation techniques. This unit may be delivered in conjunction with the Design

Theory and Graphic Design Unit and Interactive Desktop Publishing to provide a more cohesive understanding of all that is involved within this varied subject.

Finally, learners should have the underpinning knowledge and understanding to have a clear knowledge and understanding on each area of graphic design and how they will apply this to specific project briefs.

Learning Outcomes

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

1. *Explain graphic design in relation to print and screen design.*
2. *Explain and use vector graphic applications in relation to graphic design.*
3. *Explain and use bitmap graphic applications in relation to graphic design.*
4. *Apply vector and bitmap graphics in a project brief.*

ITPRJ-406-2011: Project

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This unit is intended to demonstrate the learner's ability to plan, develop and evaluate a small software development project. The unit provides learners with the opportunity to consolidate the knowledge and skills they have mastered in the units that form the basis of the qualification and use their creative and technical abilities to satisfy the requirement of the unit. Learners will be provided with a project brief and follow a specific project management approach to complete each stage of the project. The four stages comprise: providing a detailed analysis of the brief in the analysis stage, documenting and justifying the approach to the project in the planning stage followed by design, implementation and testing in the development stage and finally an evaluation of the product and the management of the project in general. This unit is suitable for any learner undertaking a course in software development or computer games development. It is recommended that the brief is provided to the learner prior to the start of the project in order to allow time for familiarisation with the content and requirements. Learners should be encouraged to produce a professional standard of documentation throughout the project and maintain a record of work carried out.

Learning Outcomes

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

1. *Analyse a given brief relating to a software development project and produce a requirements analysis.*
2. *Produce a planning report in response to the brief.*
3. *Develop a software solution that meets the brief.*
4. *Evaluate the project to include a personal reflection and an analysis of the extent to which the solution meets the requirements of the brief.*

CDKSK-406-2319: English

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This unit typically refers to English language skills needed for specific careers or vocational training programmes. The main objective of this unit is to prepare learners to understand and respond to spoken English on a variety of topics, including abstract or unfamiliar topics, to read and comprehend a variety of texts, including more extended and more complex texts, and to write in a more precise and structured way. Particular focus is given to summarising and paraphrasing.

At this level, learners should have a good understanding of English grammar, vocabulary and usage. They should be able to communicate effectively in written and spoken English, express opinions, and understand complex texts and conversations as required by various but often specific technical contexts within their selected field of study. Learners should also start acquainting themselves with researching reliable and authoritative sources of information. Moreover, they should also be able to cite this information and follow the conventions of the referencing style stipulated by their respective institute.

Learning Outcomes

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

1. *Read and understand written English effectively to improve knowledge of the subject area.*
2. *Understand extended speech and follow an argument provided the topic is related to one's own subject area.*
3. *Speak with a degree of fluency and spontaneity on topics related to one's own subject area.*
4. *Produce a research-based report or essay with appropriate choice of linguistic style and structure.*

CDKSK-406-2320: Mathematics

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

This unit provides a framework for students to develop mathematical thinking skills further to the level 3 unit specification to solve problems related to real-life situations. Students also develop skills, attributes and knowledge that contribute to their personal growth and effectiveness within their training and work environment and within the community.

The unit is designed to adapt for the needs of a particular field of study (business & finance or engineering & transport and others). To reach this goal the unit was divided into eight learning outcomes from which four learning outcomes are chosen and taught, which are related to statistics, algebra and graphical representation, geometry, areas and volumes, game theory and finance. Through these different areas students will be able to develop the effective skills for information processing, reasoning, evaluation creative thinking and enquiry, all fundamental skills for the problem-solving process. This will prepare students in applying and evaluating a range of strategies to solve real-life problems. Through this unit the learner will also learn to present and communicate results and conclusions effectively.

On successful completion of the unit the learner will be equipped with mathematical thinking skills which make them aware of and understand their thought process, to reassess and identify areas for development. Students learn to evaluate, reflect on their strategies, understand, and verify results to solve problems. These skills will equip students with managerial skills, to further their studies and for work employability.

Learning Outcomes

Learning Outcomes are electives out of which 4 are to be chosen

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

1. *Use algebraic techniques to simplify expressions and solve equations.*
2. *Identify how to simplify more complex expressions and solve harder equations.*
3. *Demonstrate visual and logical techniques in evaluating graphical representations and communication skills in presenting the results effectively.*
4. *Demonstrate skill in calculating angles, sides, areas, and volumes for any given situation.*
5. *Apply information processing skills to solve problems in a relevant statistical context.*
6. *Apply thinking skills and demonstrate evaluation skills to solve problems in a relevant game theory context.*
7. *Demonstrate evaluation and communication skills in solving and presenting problems applied to costing methods and techniques.*

CDKSK-406-2326: Critical Thinking

Unit Level (MQF/EQF): 4
Credits: 6
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 150

Unit Description

Critical Thinking is the intellectual discipline of thinking clearly and skillfully to analyse facts, evidence, observation and arguments in order to form a judgement. It is a vital skill, particularly in today's digital age. It is one of the transferable skills much needed in vocational and academic contexts as well as in the workplace. This unit engages students in a range of lectures focusing on the value of reflective practice, careful consideration of reasoned arguments and recognition of the beliefs and claims that comprise arguments. It equips learners with the means to read, interpret, reflect and write critically and reflectively. The unit aims to help students benefit from the application of these skills in other academic disciplines as well as within the workplace.

At Level 4, Critical Thinking is predominantly a practical, skills-based unit supported by an introduction to the theoretical knowledge which underpins the skills to be learned and practised. The course will introduce concepts and theories to the students that will allow them to develop their thinking skills and reflect effectively upon their learning. Students will engage in informative discussions, texts and scenarios contextualized to suit their vocational area with the aim of supporting the development of essential skills relating to reflective thinking, argument construction, reasoning and clear expression of their own opinion. The unit specification allows lecturers to implement and structure the learning in a manner that they find engages their students the most. Although suggestions of relevant texts and modes of assessment are included, lecturers are encouraged to contextualise the content as per students' vocational area of study.

The unit promotes originality, creativity, innovation, and imagination, and promotes reflection as a natural action. It also encourages students to respect the diverse opinions and views of others, even when they disagree. Through active engagement in this unit, students will benefit from a transformative and valuable learning experience.

Learning Outcomes

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

1. *Demonstrate reflective practice in written form.*
2. *Determine the main features and components of particular arguments.*
3. *Recognise reasoned arguments, claims and counterarguments.*
4. *Construct objective, analytical arguments and conclusions that are well supported by relevant use of information, evidence, and data.*

CDKSK-402-2324: Community Social Responsibility

Unit Level (MQF/EQF): 4
Credits: 2
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 50

Unit Description

This unit focuses on Community Social Responsibility and provides an opportunity for learners to better understand themselves and others to establish life goals. Community social responsibility enables learners to understand their strengths, areas for improvement, opportunities offered to them during their lifespan and threats which can hinder their achievements. This unit will prepare students for life, employment and how to become active citizens in society.

Lectures will differ from traditional delivery of other units where learners will be empowered to take ownership of their learning process. This means that this unit will be delivered through a combination of discussions, presentations, debates and application of theory through voluntary work. The sessions will focus on students becoming more self-aware of their strengths and limitations and what can be done to improve themselves. Skills needed on working and interacting with other people in the community and the right work ethics when doing the voluntary work. These sessions will help them prepare themselves for life after college and also instil civic duty to become active citizens.

Learning Outcomes

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

1. *Discover oneself through personal reflection and planning personal goals.*
2. *Interact and cooperate with other people effectively.*
3. *Develop active participation and promote community work.*

CDKSK-404-2325: Entrepreneurship Essentials

Unit Level (MQF/EQF): 4
Credits: 4
Delivery Mode: Fully Face-to-Face Learning
Total Learning Hours: 100

Unit Description

One of the main policy goals for the EU and Member States over the past years has been the development of the entrepreneurial capacity of European individuals and organizations, since there is a growing understanding that entrepreneurial abilities and information, can be learned, which in turn spurs the development of an entrepreneurial mindset and culture that is advantageous to both people and society at large.

Entrepreneurship is a transversal skill that may be used to launch businesses as well as foster personal growth, actively participate in society, and (re)enter the job market as an employee or self-employed individual (cultural, social, or commercial). Hence, it encompasses a variety of entrepreneurial endeavours, such as intrapreneurship, social entrepreneurship, green entrepreneurship, and digital entrepreneurship. It relates to value creation, and it is applicable to both individuals and groups (teams or organizations), as outlined in the definition below:

'Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social' (FFE-YE, 2012)

Therefore, the main objective of this unit is to familiarize the learners with the above-mentioned concept of entrepreneurship, with a view on enhancing entrepreneurial skills by building a strong foundation in this area of studies. Through this unit, learners will be guided on various ideation and creativity techniques, which will enable them to recognize opportunities and/ or generate ideas that address needs which are not currently being met, whilst being driven by sustainability when making these decisions. For example, through the use of the global sustainable developmental goals (SDGs) the learners are encouraged to understand the importance of sustainable development and inspire them to create businesses that contribute to this cause.

Throughout the unit, learners will be encouraged to think critically, creatively, and ethically about entrepreneurship, and to consider the impact of their ventures on society and the environment, by utilising a variety of tools such as the Business Model Canvas(BMC) as a framework, and they will also have the opportunity to develop various other transversal skills such as communication and teamwork skills.

Upon completion of this unit, learners will have developed an appreciation for the role of entrepreneurship in society and acquired an entrepreneurial mindset that will enable them to identify and pursue opportunities for innovation and growth in their personal and professional lives.

Learning Outcomes

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

1. *Identify an entrepreneurial opportunity.*
2. *Apply creative thinking tool(s) and technique(s) to generate idea(s).*
3. *Develop an entrepreneurial idea through a strategic plan.*
4. *Use effective communication skills to persuade various stakeholders.*