MQF Level 3

Diploma in ICT

IT3-01-19
IT3-01-19G

Course Description

This course is the first step in a block of a three year training programme, designed to provide the necessary skills to work in the computing industry. The course is a pre-requisite for the follow up two year Level 4 Advanced Diploma programme. At this level of study, learners will be introduced to fundamental subjects in the networking, software development and multimedia areas.

Programme Learning Outcomes

At the end of the programme the learner is able to

1. *Use modern computer systems and computer networks in the workplace.*
2. *Use multimedia systems and web development to satisfy requirements.*
3. *Use programming skills and database manipulation techniques.*
4. *Apply ICT knowledge and skills independently.*

Entry Requirements

- MCAST Foundation Certificate ;or
- 2 SEC/O-level passes/SSC&P (Level 3) passes
- Compulsory: one subject from Mathematics, Computer Studies, Physics, BTEC IT Practitioner
- Preferred :English Language

A full "Secondary School Certificate and Profile (SSC&P) at level 2 will be accepted in lieu of one (1) O-Level pass

Current Approved Programme Structure

Unit Title	ECVET/ECTS
Computer Graphics	6
Database Design and Development	6
Computer Systems	6
Web Design and Development	6
Computer Networks	6
Programming	6
English	4
Mathematics	4
Maltese	4
Individual Social Responsibility	4
Science & Technology	4
IT	4
Total ECVET/ECTS	60

Computer Graphics

Unit level (MQF): 3

Credits: 6

Unit Description

This unit presents a general introduction to digital graphics systems. It enables learners to explore techniques associated with the development of an interactive graphics product. The learners will learn about graphics system components, their roles and characteristics, digital media formats, publishing and output. Learners will be familiar with the basic types and characteristics of image files formats optimized for various purposes. In order to be able to apply the knowledge obtained, learners will learn how to use graphics hardware components and graphics application software for media processing. By combining text, images, animations, and applying filters and effects, the learners will be able to present a graphics project.

Learning Outcomes

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

1. *Understand different types of digital media sources.*
2. *Use common media sources to gather graphics project content.*
3. *Process digital media with appropriate tools.*
4. *Present a graphics project.*

Database Design and Development

Unit level (MQF): 3

Credits: 6

Unit Description

This unit is an introduction to databases and covers the basic concepts. By the end of this unit the learner will have the required skills to identify the main elements of a database, be able to plan and implement a database for a simple scenario, extract data from the database using queries, and also allow user interactivity through forms and reports. Learners will consider the validation and verification methods that can be implemented to ensure that data stored in a database is as accurate as possible.

Learning Outcomes

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

1. *Understand the basic concepts of databases.*
2. *Plan and implement a database using a DBMS.*
3. *Create queries to extract required information.*
4. *Create forms with data validation and reports.*

Computer Systems

Unit level (MQF): 3

Credits: 6

Unit Description

This unit will provide learners with a general overview of computer systems. Learners will improve their knowledge related to computer functionality and architecture, focusing on a description of a modern computer and how different components of a computer system work together. Learners will also have the opportunity to explore how the operating system, the application software and the hardware components, cooperate in order to make computer operational.

At the end of the unit learners will be able to configure and troubleshoot a personal computer system, to choose an appropriate computer system, practice installation and adjustment of an operating system and troubleshoot problems.

Learning Outcomes

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

1. *Describe the structure, types and parts of different computer systems.*
2. *Perform basic computer logic and arithmetic operations.*
3. *Describe different types of computer software.*
4. *Perform basic installation, configuration, and troubleshooting of computer systems and software.*

Web Design and Development

Unit level (MQF): 3

Credits: 6

Unit Description

Learners will be introduced to design, creation, and maintenance of web pages and websites. This unit will enable learners to achieve basic understanding of the principles and practice of professional web design and development. One of the tasks is to improve judgmental skills to evaluate website useability. Learners will also learn about web design standards and why they are important. They will gain the skills and project-based experience needed for web design and development using a variety of strategies and tools.

Learners will learn how to structure web pages using HTML how tocontrol presentation using CSS and according to the World Wide Web Consortium (W3C) recommendations. Learners will become familiar with   the uses of a web server and creation of websites using a variety of web technologies.

Initially, learners will use popular non-coding (drag and drop) applications, whereas as they progress along the course they will be exposed to manual coding of HTML and CSS scripting.

Learning Outcomes

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

1. *Describe the use of a web server and how websites work.*
2. *Plan and design a website according to specific requirements.*
3. *Implement a website according to specification.*
4. *Test and deploy a website on a live web server.*

Computer Networks

Unit level (MQF): 3

Credits: 6

Unit Description

This unit enables learners to understand the use and features of computer networks and their effect on small organisations. The unit covers the features, services and components to set up a small network for personal and commercial use. In this unit learners will be acquainted with the basic terminology related to computer networks, topology, scale and the organization of modern networks.

The basic concepts of wired and wireless networks, different topologies and implementation models will also be covered. The unit deals with general issues related to computer networks and the impact the latter have on technology and society. Learners will be guided through different types of network equipment.

This unit will also cover basic device configuration, this being an important feature of every LAN implementation. Learners will acquire basic skills in operating system configuration and network diagnostics which will help them to easily install and configure a basic LAN connection.

Learning Outcomes

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

1. *Understand the basic concepts of computer networking.*
2. *Set up and implement small wired and wireless LAN.*
3. *Configure network interfaces and operating system networking features in modern operating systems.*
4. *Setup and share network resources.*

Programming

Unit level (MQF): 3

Credits: 6

Unit Description

This unit introduces the basic principles of Software Development starting from identifying the problem to solving and designing solutions. Learners will learn how to implement an algorithm in programming language. They will also be able to build the source code and carry out appropriate testing, debugging and maintenance. Various fundamental programming aspects will also be covered. This includes data types, operators, expressions, standard input and output as well as program control methods-conditions, loops, etc. Learners will be able to make use of modular structure with functions. They will also be able to apply mechanisms used to pass information between functions. The learners will also carry out testing and debugging mechanisms to their programs.

Learning Outcomes

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

1. *Specify the requirements for   a basic software design project.*
2. *Design a specified software solution using appropriate visual representations.*
3. *Implement a software solution using different programming techniques.*
4. *Carry out testing of the final solution.*