



L-Università
ta' Malta

MATSEC
Examinations Board



SEC 39 Syllabus

Information Technology

2029

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Introduction

This syllabus is based on the curriculum principles outlined in *The National Curriculum Framework for All* (NCF) which was translated into law in 2012 and designed using the *Learning Outcomes Framework* that identify what students should know and be able to achieve by the end of their compulsory education.

As a learning outcomes-based syllabus, it addresses the holistic development of all learners and advocates a quality education for all as part of a coherent strategy for lifelong learning. It ensures that all children can obtain the necessary skills and attitudes to be future active citizens and to succeed at work in society irrespective of socio-economic, cultural, racial, ethnic, religious, gender and sexual status. This syllabus provides equitable opportunities for all learners to achieve educational outcomes at the end of their schooling which will enable them to participate in lifelong and adult learning, reduce the high incidence of early school leaving, and ensure that all learners attain key twenty-first century competences.

This programme also embeds learning outcomes related to cross-curricular themes, namely digital literacy; diversity; entrepreneurship creativity and innovation; sustainable development; learning to learn; and cooperative learning and literacy. This way students will be fully equipped with the skills, knowledge, attitudes and values needed to further learning, work, life and citizenship.

The aim of the vocational programme in Information Technology (IT) is to provide students with the underpinning knowledge related to the IT industry. By the end of the programme, students are expected to have gained sufficient skills and knowledge and be able to apply them.

Programme Learning Outcomes

At the end of the programme, I can:

- Choose computer systems and peripheral devices.
- Demonstrate an understanding of the health and safety practices.
- Install and configure an operating system.
- Identify suitable components and justify a system replacement/installation/upgrade (RIU).
- Carry out, test and document a system replacement/installation/upgrade following good working practices.
- Demonstrate knowledge about different multimedia systems.
- Create simple animations and audio-visual productions.
- Develop a static website.
- Demonstrate knowledge of networks.
- Set-up a small-scale network.
- Share data and devices amongst different users.
- Identify threats and devise security solutions.

Unit Learning Outcomes

Unit 1: Computer Hardware Installation

At the end of the unit, I can:

- LO 1. Demonstrate an understanding of good practices on the workplace.
- LO 2. Describe different types of computer systems.
- LO 3. Choose compatible internal hardware components for a computer installation (RIU).
- LO 4. Install (RIU) internal hardware components and configure the necessary software.
- LO 5. Document a computer installation (RIU).
- LO 6. Identify appropriate computer maintenance.

Unit 2: Multimedia Systems and Basic Website Design

At the end of the unit, I can:

- LO 7. Describe different types of multimedia systems.
- LO 8. Modify and create digital images and animations.
- LO 9. Use video editing software to develop an audio-visual production.
- LO 10. Plan and design a website according to specific requirements.

Unit 3: Networking

At the end of the unit, I can:

- LO 11. Demonstrate an understanding of computer networks and data transmission media.
- LO 12. Setup a small-scale local area network.
- LO 13. Share files and devices on a network.
- LO 14. Setup security measures.

Programme Level Descriptors

This syllabus sets out the content and assessment arrangements for the award of Secondary Education Certificate in Information Technology at Level 1, 2 or 3. First teaching of this programme begins in September 2024. First award certificates will be issued in 2027.

The following levels refer to the qualification levels that can be obtained by candidates sitting for SEC examinations. These are generic statements that describe the depth and complexity of each level of study required to achieve an award at Level 1, 2 or 3 in Information Technology. (Level 1 being the lowest and Level 3 the highest).

Level 1: At the end of the programme the candidate will have obtained basic knowledge, skills and competences in the subject such as basic repetitive communication skills and the ability to follow basic, simple instructions to complete tasks. Support is embedded within the task.

Level 2: At the end of the programme the candidate will have obtained good knowledge, skills and competence in the subject such as the interpretation of given information and ideas. The candidate will have developed the ability to carry out complex tasks. Limited support may be embedded within the task.

Level 3: At the end of the programme the candidate will autonomously apply knowledge and skills to a variety of complex tasks. Candidates will utilise critical thinking skills to analyse, evaluate and reflect upon their own work and that of others. Problem solving tasks may be part of the assessment process.

Interpreting the Syllabus

This document is an assessment syllabus. Whilst the content provided is the minimum expected for assessment purposes, the provision of further examples or information is encouraged – although not mandatory – for students to enjoy the learning process and get a better overview of the subject.

Unit Structure

The various learning outcomes, assessment criteria, and content are grouped under three units. Each unit is presented in the following structure:

- Title
- Description
- Learning Outcomes
- Assessment Criteria and Content
- Learning Outcomes and Assessment Criteria

Educators may devise their own plan for content delivery across the years of study. They may choose to follow the unit learning outcomes and content structure as presented in the syllabus, and conclude each unit by the end of every scholastic year, or follow a different order which in their professional view would be more conducive to learning of any particular subject area or topic. However, by the end of the three-year programme in Year 11, all content delivery and continuous assessment should be completed, in time for submission to MATSEC in the indicated time-frames and format.

Assessment Criteria

The active verb used in assessment criteria (such as list, identify, outline, describe, explain, etc...) indicates what candidates are expected to know or be able to do. It also provides direction with respect to expected complexity in the candidates' responses or work. These verbs are defined in the Glossary of Terms available on the MATSEC website. Application criteria are to be interpreted in terms of Bloom's taxonomy psychomotor domain.

Content

For each assessment criterion, only the minimum content that needs to be covered is listed. Examples (e.g.), commas, semi-colons, bullets, 'or', and 'N.B.' are used for presentation and guidance purposes only. While all the material reflecting both the unit content and the assessment criteria is to be delivered, this will not necessarily be assessed by MATSEC in its entirety, as indicated in the Scheme of Assessment. Where the plural is used in any assessment criterion (e.g. types, aspects, steps, etc.), two or more answers are usually expected, although this may not always be the case.

Scheme of Assessment

The assessment of this subject follows the Secondary Education Certificate Regulations and the MATSEC Assessment Code of Practice governing each respective cohort. It shall be based on three components, each of which contributes towards the overall subject mark as follows:

COMPONENT	LEVEL WEIGHT (OVERALL SUBJECT MARK)
SBA (Paper I)	30%
Coursework (Portfolio)	30%
Controlled assessment (Paper II)	40%

Candidates have to attempt all three assessment components, and fulfil the set criteria in the coursework component and Paper II, to obtain a level higher than Level 1.

Individuals may not register as private candidates in this subject, unless they are resitting the subject in a subsequent Main Session. In the latter case, marks obtained in the SBA and the coursework can be carried forward for up to five years from the first sitting.

School-based assessment (SBA)

SBA (Paper I) refers to the assessment of the application criteria specified in the syllabus, assigned to candidates and marked by school teachers. This component is unmoderated.

SBA should be set at Level 1-2-3, following a 30-30-40 percentage mark allocation, with Level 3 carrying the highest marks.

The SBA should be marked out of 100 each year (9, 10, and 11). The assessment for each year will contribute to 10% of the overall subject mark and will be reported to MATSEC by the school when the candidate is in Year 11. Therefore, each year will equally contribute to the final 30% mark of the SBA.

SBA SUBMISSION TO MATSEC IN YEAR 11			LEVEL WEIGHT (OVERALL SUBJECT MARK)
Year 9	Year 10	Year 11	30%
[0 to 100] marks	[0 to 100] marks	[0 to 100] marks	

Coursework

Coursework in this subject refers to a Portfolio, divided in three parts carried out across the three-year programme, which will be set and marked by the teacher following the templates downloadable from the MATSEC website and the marking schemes included as an appendix in the syllabus. This component is moderated.

Each coursework part will be marked out of 60 and will be set at Level 1-2-3. The assessment of each part will contribute to 10% of the overall mark and will be reported to MATSEC by the school when the candidate is in Year 11. Therefore, each part will equally contribute to the final 30% mark of coursework.

The school is to upload a digital copy of their candidates' coursework on the MATSEC portal by the date established by the MATSEC Board and ensure that all coursework is available as instructed. Candidates may be called for an interview in relation to their coursework.

Candidates are to fulfil the set criteria in this assessment component to obtain a level higher than Level 1.

COURSEWORK SUBMISSION TO MATSEC IN YEAR 11 FOR MODERATION			LEVEL WEIGHT (OVERALL SUBJECT MARK)
Part 1	Part 2	Part 3	30%
Based on any TWO application criteria from Unit 1	Based on any TWO application criteria from Unit 2	Based on any ONE application criterion from Unit 3 and a Self-Evaluation	
[0 to 60] marks	[0 to 60] marks	[0 to 60] marks	

Controlled Assessment

The controlled assessment (Paper II) comprises a two-hour written exam set and marked by MATSEC at the end of the three-year programme.

The paper will carry a total of 100 marks and will be set at Level 1-2-3. It will include questions based on a number of knowledge or comprehension criteria from different units, learning outcomes and levels.

Attainment in this component will be reported by MATSEC as a Grade using an 8-point scale and will contribute towards 40% of the marks in determining the overall level.

Candidates are to fulfil the set criteria in this assessment component to obtain a level higher than Level 1.

CONTROLLED ASSESSMENT IN YEAR 11	LEVEL WEIGHT (OVERALL SUBJECT MARK)
Two-hour exam paper	40%
[0 to 100] marks	

Unit 1: Computer Hardware Installation

Unit Description

In this unit candidates will become aware of the risks involved when the necessary precautions are not taken in an IT environment. Hence, they will learn about the good practices that should be followed while replacing and/or installing and/or upgrading (RIU) internal hardware components.

Candidates will also learn about the different types of computer systems, including input, output and secondary storage devices, and their use. Given that no computer system works without software, candidates will learn how to install an operating system.

Due to various reasons, by time computer systems need to be upgraded or maintained. Therefore, through this unit, candidates will be able to recognise when a computer system needs to be maintained, be able to identify the problem and determine what kind of maintenance is to be carried out to solve the problem. In this process they will acquire the necessary skills to be able to choose compatible components, perform an internal hardware component RIU and install and configure the necessary software.

Candidates will also learn about the importance of testing the computer system after RIU hardware components to ensure that it works and therefore verify that the RIU is successfully carried out. They will also become aware of component registration and be able to document an RIU.

Learning Outcomes

At the end of the unit, I can:

- LO 1.** Demonstrate an understanding of good practices on the workplace.
- LO 2.** Describe different types of computer systems.
- LO 3.** Choose compatible internal hardware components for a computer installation (RIU).
- LO 4.** Install (RIU) internal hardware components and configure the necessary software.
- LO 5.** Document a computer installation (RIU).
- LO 6.** Identify appropriate computer maintenance.

Assessment Criteria and Content

Subject Focus	Health and Safety on the workplace		
LO 1.	Demonstrate an understanding of good practices on the workplace.		
K-1.	K-1. Identify hazards in an IT environment.	K-1. List risks that might arise from hazards in an IT environment.	K-1. Outline precautions to minimise potential risks.
	Hazards: e.g. high voltage, high electrostatic energy, sharp objects, trailing cables, lifting heavy objects.		
	Risks: e.g. physical damage to equipment, electrostatic discharge, data loss, data corruption, human injuries, tripping, electrocution.		
	Precautions: e.g. use antistatic equipment, use appropriate tools, ergonomics, no trailing cables, backups, wear adequate clothing, firefighting equipment and procedures.		
K-2.	K-2. Match the different safety signs present in an IT environment with their respective meaning.	K-2. Categorise different safety signs.	K-2. Explain the purpose of different safety signs in a given scenario.
	Safety signs*: e.g. high voltage (electricity), toxic material, flammable material, laser beam, no eating or drinking, no smoking, wear eye protection, no running, connect an earth terminal to the ground, fire extinguisher, emergency exit, first aid, emergency stop button.		
	Safety signs categories*: e.g. prohibition, mandatory action, warning, evacuation route/location of safety equipment or safety facility/safety action, fire equipment. <i>*N.B. It is highly suggested that reference is made to ISO 7010 standards.</i>		
C-1.	C-1. List the consequences of not taking the necessary precautions in a given scenario.	C-1. Determine the costs involved when good practices are not observed in a given scenario.	C-1. Explain the precautions that should be taken to prevent consequences in a given scenario.
	Consequences: ESD; equipment damage; human injury; data loss; data corruption.		
	Costs*: e.g. cost of damaged equipment, delivery/postage costs, hourly rate of repair, hourly rate of data recovery, monetary value of data, medical costs to human injury (medicines, insurance, doctors, sick leave). <i>*N.B. For assessment purpose, the concept of 'costs' should be considered and not necessarily the actual monetary value.</i>		
	Precautions: e.g. antistatic equipment, adequate tools, firefighting equipment, regular backups, premises insurances, employee insurances.		

Subject Focus	Computer systems		
LO 2.	Describe different types of computer systems.		
K-3.	K-3. List different types of computer systems.	K-3. Select appropriate input and output devices for a given situation/s.	K-3. Present a data flow block diagram.
	Computer systems: e.g. server, desktop computer, laptop, tablet, gaming console, smartphone, embedded device, wearable.		
	<p>Input devices and output devices:</p> <ul style="list-style-type: none"> • Input device: mouse or scanner or touchpad or keyboard or Braille keyboard or eye-tracking system or joystick or joypad or microphone or 3D-scanner or dedicated sensors or Optical Mark Reader (OMR) or Magnetic Ink Character Reader (MICR) or graphics tablet or barcode reader; • Output device: monitor or projector or 2D-printer or 3D-printer or plotter or speaker or headphones or VR headset. 		
<p>Data flow block diagram:</p> <ul style="list-style-type: none"> • Input; • Process: Arithmetic Logic Unit (ALU); Control Unit (CU); Memory Unit (MU); • Output; • Secondary storage; • Flow of data. 			
K-4.	K-4. Name different types of software.	K-4. List different examples of each type of software.	K-4. Describe the purpose of different types of software.
	Types of software: system software; application software.		
	<p>Examples of software:</p> <ul style="list-style-type: none"> • System software: e.g. Windows, Linux, Mac OSX, Android; • Application software: e.g. word processor, medical software, image editor. <p>N.B. For assessment purposes, system software and application software should be considered as the types of software which purpose is to be described.</p>		
C-2.	C-2. Justify the appropriate computer system for a given scenario.	C-2. Justify the appropriate input and/or output devices for a given scenario.	C-2. Justify the appropriate storage requirements for a given scenario.
	Justification of a computer system: e.g. cost, speed, portability.		
	<p>Justification of input and/or output devices: e.g. use, specifications, connectivity, cost.</p> <p>N.B. For assessment purposes, the same aspect could be used for both input and output.</p>		
	<p>Justification of storage requirements: e.g. storage technology (magnetic, optical, electronic), capacity, access speed, longevity of device, portability.</p> <p>N.B. For assessment purposes, any ONE of the following secondary storage devices should be considered: hard disk or CD or DVD or Blu-ray or Solid-State Disk (SSD) or flash memory card or USB flash drive or magnetic tape.</p>		

A-1.	A-1. Install an operating system.	A-1. Set a restore point.	A-1. Apply disk partitioning.
	Install an operating system: check operating system requirements (RAM; CPU; storage capacity; graphics card); setup boot-up sequence; select type of installation.		
	Set a restore point: open window to create a restore point; set the restore point; type a name for the restore point.		
	Disk partitioning: remove any present partitions; set the appropriate primary and second partition size; create TWO partitions*; format the second partition. N.B. For assessment purposes, disk partitioning should be carried out during the installation of the operating system. *N.B. For assessment purposes, all partitions should be 'allocated'.		

Subject Focus	Compatibility of internal hardware components		
LO 3.	Choose compatible internal hardware components for a computer installation (RIU).		
K-5.	K-5. Label different internal hardware components.	K-5. List the reasons for which a computer upgrade may be required.	K-5. Outline the implications of upgrading a computer in a given scenario.
	Internal hardware components: e.g. RAM, CPU, heat sink, hard disk, SSD, graphics card, sound card, network card, power supply unit, motherboard.		
	Reasons for upgrading a computer: user requirements; increase storage capacity; increase processing speed; increase hardware reliability (intermittent faults); cater for minimum software requirement. Implications of upgrading a computer: user re/training; hardware compatibility problems; software compatibility problems; decommissioning of hardware; migration of data.		
C-3.	C-3. Choose compatible components based on a given motherboard and/or user requirements.	C-3. Justify components for a given motherboard based on compatibility.	C-3. Justify components based on user requirements in a given scenario.
	Components: RAM; CPU with heat sink; secondary storage devices; expansion cards; Power Supply Unit (PSU).		

Subject Focus	Installation of internal hardware components		
LO 4.	Install (RIU) internal hardware components and configure the necessary software.		
K-6.	K-6. State the purposes of POST.	K-6. List different types of boot-up errors.	K-6. Describe different types of boot-up errors.
	Purposes of POST: e.g. determining the computer status, indicating system issues, troubleshooting boot-up errors, checking that all hardware is functional.		
Boot-up errors: e.g. beep codes, LED patterns, error messages.			
C-4.	C-4. Identify the hardware problem that has generated given boot-up errors.	C-4. Describe possible causes that have generated given boot-up errors.	C-4. Explain possible solutions to solve the generated boot-up errors.
	Possible boot-up error report hardware problems: power-related or CPU-related or motherboard-related. N.B. For assessment purposes at Level 1, screen-based boot-up errors should be taken into consideration.		
A-2.	A-2. Follow Health and Safety procedures while installing hardware.	A-2. Prepare the necessary tools and components to carry out the required hardware RIU.	A-2. Install the required components.
	Health and Safety procedures while installing hardware: wear appropriate clothing; switch off power; disconnect plug; remove power cable; disconnect remaining computer cables from computer; place components on antistatic mat; open case carefully; look out for sharp edges; wear antistatic wrist strap; be organised; handle tools safely.		
	Preparation to carry out hardware RIU: tools; anti-static equipment; cleaning equipment; hardware components; software; check component compatibility; recording of serial numbers. Installation of components: clean hardware components; install hardware component one*; install hardware component two*; reassemble computer; install any necessary software**. * N.B. For assessment purposes, the installation of hardware may require a replacement of a component. ** N.B. For assessment purposes, software installation and configuration may not necessarily be linked to a driver but to other software used to test hardware functionality.		

Subject Focus	Computer upgrade testing and documentation		
LO 5.	Document a computer installation (RIU).		
K-7.	K-7. List different ways which can be used to test an RIU.	K-7. Outline ways which can be used to test an RIU.	K-7. Explain the importance of testing an RIU.
	Ways to test an RIU: e.g. system information, device manager, third-party diagnostic tools.		
	Importance of RIU testing: ensure installed component is working properly; ensure that the computer system is performing in line with the requirements.		
K-8.	K-8. Name the sections of an RIU documentation.	K-8. Outline the content of the various sections of an RIU documentation.	K-8. Describe the importance of documenting an RIU.
	RIU documentation sections: reason for the RIU; solution proposed; actual implementation; testing.		
	Importance of documentation: record keeping of work done; warranties of any components; completed test plan; reference point for troubleshooting.		
K-9.	K-9. Define product registration.	K-9. Identify the methods of registering products.	K-9. List the advantages of registering products.
	Methods: website; traditional post; email; mobile app.		
	Advantages: e.g. hardware updates, software updates, technical assistance, guaranteed warranty, promotional offers, communication about recalls.		
A-3.	A-3. Create a test plan to test RIU components.	A-3. Carry out tests on every RIU component.	A-3. Document the RIU.
	Test plan for RIU components based on: e.g. system information, device manager, third-party diagnostic tools.		
	Testing RIU components: TWO tests for component 1; TWO tests for component 2; tests carried out according to test plan. <i>N.B. For assessment purposes, tests carried out should include a variety of ways which can be used for testing a replaced/installed/upgraded hardware component, based on the test plan.</i>		
	Documentation of RIU: reason/s for RIU; suggested RIU; actual implementation including specifications of installed components; log of serial numbers; results of the two tests for each component installed/upgraded/replaced.		

Subject Focus	Computer maintenance		
LO 6.	Identify appropriate computer maintenance.		
K-10.	K-10. State reasons why computer maintenance is important.	K-10. List the different types of computer maintenance.	K-10. Define the various types of computer maintenance.
	Reasons for computer maintenance: e.g. keeping the computers in a good state of repair, keep the computer system working according to the changing user needs, reduce chances of costly repairs.		
	Types of computer maintenance: preventative; corrective; perfective; adaptive.		
C-5.	C-5. Identify the appropriate computer maintenance for given scenarios.	C-5. Justify the chosen computer maintenance for given scenarios.	C-5. Explain the necessary approach to carry out the computer maintenance for given scenarios.
	<p>Scenarios in relation to maintenance:</p> <ul style="list-style-type: none"> • Preventative: e.g. ensure that air vents are free from dust, take regular backups, cleaning the system; • Corrective: e.g. replace parts when they malfunction, re-attach cables which come loose, re-install software which has become corrupt; • Perfective: e.g. increase storage capacity, increase screen size, upgrade to a more powerful software application; • Adaptive: e.g. use adaptors to connect older hardware to new systems or vice-versa, install drivers to accommodate new peripherals, convert old files to work with new version of application. 		

Learning Outcomes and Assessment Criteria

Subject Focus:	Health and Safety on the workplace
Learning Outcome 1:	Demonstrate an understanding of good practices on the workplace.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-1. Identify hazards in an IT environment.	K-1. List risks that might arise from hazards in an IT environment.	K-1. Outline precautions to minimise potential risks.	C-1. List the consequences of not taking the necessary precautions in a given scenario.	C-1. Determine the costs involved when good practices are not observed in a given scenario.	C-1. Explain the precautions that should be taken to prevent consequences in a given scenario.			
K-2. Match the different safety signs present in an IT environment with their respective meaning.	K-2. Categorise different safety signs.	K-2. Explain the purpose of different safety signs in a given scenario.						

Subject Focus:	Computer systems
Learning Outcome 2:	Describe different types of computer systems.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-3. List different types of computer systems.	K-3. Select appropriate input and output devices for a given situation/s.	K-3. Present a data flow block diagram.	C-2. Justify the appropriate computer system for a given scenario.	C-2. Justify the appropriate input and/or output devices for a given scenario.	C-2. Justify the appropriate storage requirements for a given scenario.	A-1. Install an operating system.	A-1. Set a restore point.	A-1. Apply disk partitioning.
K-4. Name different types of software.	K-4. List different examples of each type of software.	K-4. Describe the purpose of different types of software.						

Subject Focus:	Compatibility of internal hardware components
Learning Outcome 3:	Choose compatible internal hardware components for a computer installation (RIU).

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-5. Label different internal hardware components.	K-5. List the reasons for which a computer upgrade may be required.	K-5. Outline the implications of upgrading a computer in a given scenario.	C-3. Choose compatible components based on a given motherboard and/or user requirements.	C-3. Justify components for a given motherboard based on compatibility.	C-3. Justify components based on user requirements in a given scenario.			

Subject Focus:	Installation of internal hardware components
Learning Outcome 4:	Install (RIU) internal hardware components and configure the necessary software.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-6. State the purposes of POST.	K-6. List different types of boot-up errors.	K-6. Describe different types of boot-up errors.	C-4. Identify the hardware problem that has generated given boot-up errors.	C-4. Describe possible causes that have generated given boot-up errors.	C-4. Explain possible solutions to solve the generated boot-up errors.	A-2. Follow Health and Safety procedures while installing hardware.	A-2. Prepare the necessary tools and components to carry out the required hardware RIU.	A-2. Install the required components.

Subject Focus:	Computer upgrade testing and documentation
Learning Outcome 5:	Document a computer installation (RIU).

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-7. List different ways which can be used to test an RIU.	K-7. Outline ways which can be used to test an RIU.	K-7. Explain the importance of testing an RIU.						
K-8. Name the sections of an RIU documentation.	K-8. Outline the content of the various sections of an RIU documentation.	K-8. Describe the importance of documenting an RIU.				A-3. Create a test plan to test RIU components.	A-3. Carry out tests on every RIU component.	A-3. Document the RIU.
K-9. Define product registration.	K-9. Identify the methods of registering products.	K-9. List the advantages of registering products.						

Subject Focus:	Computer maintenance
Learning Outcome 6:	Identify appropriate computer maintenance.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-10. State reasons why computer maintenance is important.	K-10. List the different types of computer maintenance.	K-10. Define the various types of computer maintenance.	C-5. Identify the appropriate computer maintenance for given scenarios.	C-5. Justify the chosen computer maintenance for given scenarios.	C-5. Explain the necessary approach to carry out the computer maintenance for given scenarios.			

Unit 2: Multimedia Systems and Basic Website Design

Unit Description

This unit presents a general introduction to digital multimedia systems. It enables candidates to explore techniques associated with the development of an interactive multimedia product. Candidates will familiarise themselves with the different types of media and the hardware necessary to develop such media. Moreover, candidates will learn about multimedia systems, their roles, features and characteristics.

Through the unit candidates acquire the necessary knowledge in relation to image, audio and video file formats and their characteristics allowing them to choose the most appropriate formats according to the given circumstances. In order to apply the knowledge obtained, candidates will learn how to use multimedia hardware components and multimedia application software for media processing. Candidates will learn how to use software applications for editing images and creating animations. They will also be able to select and use video software tools and techniques to edit video sequences. This will allow candidates to use experimental and creative approaches while acquiring production skills. By combining text, images, animations, audio and videos, candidates will be able to develop a multimedia project using video editing software.

Candidates will also be able to design, create and modify simple static websites. This unit will enable candidates to achieve basic understanding of the principles of professional web design and development. Candidates will also learn about web design standards and why they are important.

Learning Outcomes

At the end of the unit, I can:

- LO 7.** Describe different types of multimedia systems.
- LO 8.** Modify and create digital images and animations.
- LO 9.** Use video editing software to develop an audio-visual production.
- LO 10.** Plan and design a website according to specific requirements.

Assessment Criteria and Content

Subject Focus	Multimedia systems		
LO 7.	Describe different types of multimedia systems.		
K-11.	K-11. List the different types of media.	K-11. Match the different types of media with the human senses.	K-11. Identify the hardware required for specific media.
	Types of Media: e.g. text, images, audio, video, animation, 3D model, vibrations.		
	Senses: e.g. sight, hearing, touch.		
	Hardware required: e.g. keyboard, mouse, monitor, speakers, microphone, (digital) cameras, graphic tablets, video capture hardware, MIDI keyboard, haptic feedback devices, printer, 3D printer, scanner, 3D scanner.		
C-6.	C-6. Select a multimedia system for a given scenario/s.	C-6. Describe the multimedia system chosen for a given scenario/s.	C-6. Justify the most appropriate multimedia system for a given scenario/s.
	Multimedia systems: e.g. websites, gaming, social media, virtual reality, holograms, information kiosks, simulations.		
	Justifications based on: e.g. audience, costs (I/O devices, software availability), time-limitation.		

Subject Focus	Images and animations		
LO 8.	Modify and create digital images and animations.		
K-12.	K-12. State the main characteristics of image formats.	K-12. Identify the characteristics of an image format/s.	K-12. Describe the characteristics of an image format/s.
	Image characteristics: e.g. compression (uncompressed/lossy/lossless), bit/colour depth, image size, resolution (ppi, dpi), vector/raster.		
	Image formats: e.g. BMP, JPEG, GIF, PNG, WebP, SVG, PSD, XCF, HEIC, HEIF.		
K-13.	K-13. Define the term 'animation'.	K-13. State the purposes of using storyboards for animations.	K-13. Outline good practices when creating animations.
	Purposes of using storyboards: plan the animation; be organised; save time from creating multiple versions; help to identify issues/missing details.		
	Good practices when creating animations: e.g. setting clear objectives, creating a storyboard, timing and pacing, using keyframes, consistent styles, testing, optimisation for output, seeking feedback, legal considerations.		

C-7.	C-7. Select an appropriate image format for a particular scenario.	C-7. Justify the image format for a particular scenario.	C-7. Compare and contrast between two images of different characteristics.
	Selection, justification and comparison of image formats based on: e.g. compression (uncompressed/lossy/lossless), bit/colour depth, image size, resolution (ppi, dpi), vector/raster.		
A-4.	A-4. Plan a simple animation for a particular scenario.	A-4. Use basic tools to edit images for an animation.	A-4. Create a simple animation for a particular scenario.
	Planning: storyboard; storyboard includes at least 5 keyframes; set image size; import images from web and/or secondary storage and/or digital camera and/or mobile device; record sources of content created by others.		
	Basic tools to edit images: create/copy/delete layers; add text; add image effect/s or filter/s.		
	Animation: contains at least 5 keyframes; appropriate delay between transitions; exportation; meets the objectives of the given scenario; shows creativity.		

Subject Focus	Audio and video production		
LO 9.	Use video editing software to develop an audio-visual production.		
K-14.	K-14. Name different audio file characteristics.	K-14. Match different types of audio files with their characteristics.	K-14. Describe the different audio file characteristics.
	Audio file characteristics: bitrate; compression (lossy/lossless/uncompressed).		
	Audio file types: e.g. FLAC, ALAC, WAV, AAC, MP3.		
K-15.	K-15. Name different video file characteristics.	K-15. Identify the characteristics of a given video file type.	K-15. Describe the different video file characteristics.
	Video file characteristics: e.g. compression (lossy/lossless/uncompressed), video bitrate, frame rate, aspect ratio, frame dimensions, duration (length).		
	Video file types: FLV or MP4 or WebM or mkv or avi.		
C-8.	C-8. Select an appropriate audio and/or video file for the given scenario/s.	C-8. Explain why audio and/or video files are not appropriate for the given scenario/s.	C-8. Justify the selected audio and/or video file for the given scenario/s.
	Appropriateness of audio/video files based on: e.g. compression, compatibility.		

A-5.	A-5. Plan an audio-visual production for a given scenario.	A-5. Produce an audio-visual production for a given scenario.	A-5. Export an audio-visual production for a given scenario which includes special effects.
	Planning: video sequence; background music; narration; text.		
	Production: different videos clips; background music; narration; text; aspect ratio.		
	Special effects and exportation: transitions; video effect/filter; frame rate; video exported in an appropriate format; creativity.		

Subject Focus	Website development		
LO 10.	Plan and design a website according to specific requirements.		
K-16.	K-16. List different types of websites.	K-16. Outline the purpose of different types of websites.	K-16. Explain important aspects to be considered when designing websites.
	Types of websites: e.g. educational, e-commerce, informational, blog, portfolio, news, governmental services, social media, entertainment, job boards.		
Aspects to be considered when designing websites: e.g. user friendliness, accessibility, fast loading times, well formatted content, compatibility, responsiveness.			
K-17.	K-17. List the basic website elements.	K-17. Identify the basic elements of a given website.	K-17. Outline the purpose of the basic website elements.
	Elements: navigation menu; header; footer; content.		
K-18.	K-18. Define the terms static and dynamic websites.	K-18. Indicate the tools required to build static and dynamic websites.	K-18. Identify between static and dynamic websites.
	Tools: <ul style="list-style-type: none"> Static websites tools: e.g. HTML, CSS, JavaScript; Dynamic websites tools: e.g. HTML, database, server-side scripting (PHP/ASP.NET). 		
K-19.	K-19. Define HTML and its use.	K-19. Match HTML tags with the respective attributes.	K-19. Outline the use of HTML tags in a given code snippet.
	HTML tags: e.g. HTML, head, title, link, body, p, h, a, br, hr, img, !--, ul, ol, li, table (th, tr, td), div, aside, figure, footer, header, main, nav, section.		
Attributes: e.g. href, rel, target, id, class, source, alt.			

K-20.	K-20. Define CSS and its use.	K-20. Distinguish between different types of CSS.	K-20. Outline the use of CSS selectors and declarations in a given code snippet.
	CSS usage: control over layout and presentation of HTML; separate design from content.		
	Types of CSS: e.g. external, internal, inline.		
	Selectors and declarations: <ul style="list-style-type: none"> • Selectors: e.g. . (dot), #, *, <i>element</i>. • Declarations: e.g. width, height, margin, padding, border, float, color, background, font. 		
C-9.	C-9. Select appropriate website elements for a given scenario.	C-9. Justify the appropriate website elements for a given scenario.	C-9. Argue whether the website should be static or dynamic for a given scenario.
	Scenarios: commercial or educational or e-government or entertainment.		
	Arguments based on: e.g. page type (.html or .php or .asp), changing content over time, search box.		
C-10.	C-10. Identify errors in a given code snippet/s.	C-10. Correct errors in a given code snippet/s.	C-10. Enhance a given code snippet for a given scenario.
	Errors in code snippets: errors in HTML; errors in CSS. N.B. For assessment purposes, identification of errors can be carried out manually or using HTML and CSS validators.		
	Enhancements: e.g. convert inline CSS to external, modify HTML, modify layout and appearance.		
A-6.	A-6. Design the wireframe for a three-page website.	A-6. Implement the content of the website using HTML.	A-6. Publish the website formatted using CSS.
	Design: wireframe layout for a 3-page static website; navigational structure; theme; image placeholder; text placeholder; video placeholder.		
	Development of HTML files: 3 static webpages; navigational structure; image placeholder; text placeholder; video placeholder; content related to theme.		
	Publishing of the website: appropriate use of external CSS; appropriate use of internal CSS; appropriate use of inline CSS; webpages load; links on all webpages work; image uploads; video loads and plays; host website online.		

Learning Outcomes and Assessment Criteria

Subject Focus:	Multimedia systems
Learning Outcome 7:	Describe different types of multimedia systems.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-11. List the different types of media.	K-11. Match the different types of media with the human senses.	K-11. Identify the hardware required for specific media.	C-6. Select a multimedia system for a given scenario/s.	C-6. Describe the multimedia system chosen for a given scenario/s.	C-6. Justify the most appropriate multimedia system for a given scenario/s.			

Subject Focus:	Images and animations
Learning Outcome 8:	Modify and create digital images and animations.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-12. State the main characteristics of image formats.	K-12. Identify the characteristics of an image format/s.	K-12. Describe the characteristics of an image format/s.	C-7. Select an appropriate image format for a particular scenario.	C-7. Justify the image format for a particular scenario.	C-7. Compare and contrast between two images of different characteristics.	A-4. Plan a simple animation for a particular scenario.	A-4. Use basic tools to edit images for an animation.	A-4. Create a simple animation for a particular scenario.
K-13. Define the term 'animation'.	K-13. State the purposes of using storyboards for animations.	K-13. Outline good practices when creating animations.						

Subject Focus:	Audio and video production
Learning Outcome 9:	Use video editing software to develop an audio-visual production.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-14. Name different audio file characteristics.	K-14. Match different types of audio files with their characteristics.	K-14. Describe the different audio file characteristics.	C-8. Select an appropriate audio and/or video file for the given scenario/s.	C-8. Explain why audio and/or video files are not appropriate for the given scenario/s.	C-8. Justify the selected audio and/or video file for the given scenario/s.	A-5. Plan an audio-visual production for a given scenario.	A-5. Produce an audio-visual production for a given scenario.	A-5. Export an audio-visual production for a given scenario which includes special effects.
K-15. Name different video file characteristics.	K-15. Identify the characteristics of a given video file type.	K-15. Describe the different video file characteristics.						

Subject Focus:	Website development
Learning Outcome 10:	Plan and design a website according to specific requirements.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-16. List different types of websites.	K-16. Outline the purpose of different types of websites.	K-16. Explain important aspects to be considered when designing websites.	C-9. Select appropriate website elements for a given scenario.	C-9. Justify the appropriate website elements for a given scenario.	C-9. Argue whether the website should be static or dynamic for a given scenario.	A-6. Design the wireframe for a three-page website.	A-6. Implement the content of the website using HTML.	A-6. Publish the website formatted using CSS.
K-17. List the basic website elements.	K-17. Identify the basic elements of a given website.	K-17. Outline the purpose of the basic website elements.						
K-18. Define the terms static and dynamic websites.	K-18. Indicate the tools required to build static and dynamic websites.	K-18. Identify between static and dynamic websites.						
K-19. Define HTML and its use.	K-19. Match HTML tags with the respective attributes.	K-19. Outline the use of HTML tags in a given code snippet.	C-10. Identify errors in a given code snippet/s.	C-10. Correct errors in a given code snippet/s.	C-10. Enhance a given code snippet for a given scenario.			
K-20. Define CSS and its use.	K-20. Distinguish between different types of CSS.	K-20. Outline the use of CSS selectors and declarations in a given code snippet.						

Unit 3: Networking

Unit Description

In this unit candidates will become acquainted with the basic terminology related to computer networks, including types of networks, hardware components and data transmission media. In addition, they will also learn how computer systems communicate together over a network. Along with this knowledge, candidates will also acquire the necessary skills to plan a network setup. They will also learn how to crimp an Ethernet cable and be able to setup a small-scale network.

The setting up of a network by itself does not allow sharing of resources and data. Hence, candidates will also learn about the different user accounts and file/folder sharing permissions that can be assigned to different users. A hands-on-approach in which candidates are required to share files/folders and devices among users will also be covered.

Different network security threats and ways to protect the network from such risks will also be tackled. Candidates will also learn how using third-party security suites, firewalls and router settings, the network can be protected from threats and unauthorised access.

Learning Outcomes

At the end of the unit, I can:

- LO 11.** Demonstrate an understanding of computer networks and data transmission media.
- LO 12.** Setup a small-scale local area network.
- LO 13.** Share files and devices on a network.
- LO 14.** Setup security measures.

Assessment Criteria and Content

Subject Focus	Computer networks		
LO 11.	Demonstrate an understanding of computer networks and data transmission media.		
K-21.	K-21. List the elements that make up a network.	K-21. State the purpose of a network.	K-21. Outline the use of networks in different places.
	Network elements: end devices; intermediate devices; data transmission medium; data; protocols.		
	Purpose: sharing of hardware; sharing of software; sharing of data; communication based on a set of rules.		
	Places: e.g. banks, schools, hospitals, home, hotels, cars, cities.		
K-22.	K-22. Name different types of networks.	K-22. Outline different types of networks based on geographical area.	K-22. Differentiate between client-server and peer-to-peer architectures.
	Types of networks: e.g. PAN, BAN, HAN, LAN, MAN, WAN.		
	Differentiation between client-server and peer-to-peer based on: e.g. cost, network management, security.		
K-23.	K-23. State different types of data transmission signals.	K-23. Categorise data transmission media as wired or wireless.	K-23. Outline limitations of data transmission media.
	Data transmission signals: e.g. electrical, light, electromagnetic (radio waves, microwaves).		
	Data transmission media categories: <ul style="list-style-type: none"> • Wired: e.g. twisted pair cable, coaxial cable, optical fibre cable; • Wireless: e.g. infrared, radio frequency (Bluetooth, Wi-Fi), microwave frequency. 		
	Data transmission media limitations: e.g. distance, bandwidth, interference, robustness.		
C-11.	C-11. Identify the best type of network for a given scenario.	C-11. Justify the best type of network for a given scenario.	C-11. Justify the appropriate data transmission medium for a given scenario.
	Type of network: PAN or BAN or HAN or LAN or MAN or WAN.		
	Justification of type of network based on: e.g. area, use.		
	Justification of data transmission medium based on: e.g. distance, bandwidth, interference, robustness. N.B. For assessment purposes, the specific type of medium (e.g. coaxial for wired or infrared for wireless) should be considered.		

Subject Focus	Protocols and networking hardware components		
LO 12.	Setup a small-scale local area network.		
K-24.	K-24. List different network protocols.	K-24. Identify whether network protocols are secure or not.	K-24. Outline the use of different network protocols.
	Secure and unsecure protocols: <ul style="list-style-type: none"> Secure protocols: e.g. HTTPS, FTPS, POP3S, SMTPS; Unsecure protocols: e.g. HTTP, FTP, POP3, SMTP. 		
	Networking protocols use: e.g. web browsing, sending emails, receiving emails, file transfer.		
K-25.	K-25. Identify network devices symbols.	K-25. Classify different network devices.	K-25. Outline the use of different intermediate network devices.
	Network devices: e.g. PC, laptop, printer, router, switch, modem, repeater, access point. N.B. For assessment purposes, CISCO symbols should be used.		
	Classification of network devices: end devices; intermediate devices.		
K-26.	K-26. Categorise addresses as IPv4, IPv6 and MAC addresses.	K-26. Outline the use of static and dynamic IP addressing.	K-26. Differentiate between IP addressing and MAC addressing.
	Differentiation between IP addressing and MAC addressing based on: e.g. purpose, number of bits, address assignment method, logical and physical addressing, possibility to be changed. N.B. For assessment purposes at Level 3, both IPv4 and IPv6 may be considered.		
A-7.	A-7. Prepare a CAT5e/6 cable for crimping.	A-7. Crimp a CAT5e/6 cable.	A-7. Connect two wired networks via a router using cables.
	Preparation for cable crimping: cut cable to length; strip cable; untwist pairs; put cables in order according to standard (T568A or T568B). N.B. For assessment purposes, the types of cabling to be used should be male-to-male straight or male-to-male crossover.		
	Cable crimping: insert cable in connector; crimp; test cable for functionality. N.B. For assessment purposes, the types of cabling to be used should be male-to-male straight or male-to-male crossover. Connecting two wired LANs via a router: connect network cables between router and switches; connect router to power; physically connect end devices to switches; discover pre-configured end devices IP addresses; ping network devices to test connectivity. N.B. For assessment purposes, end devices and router interfaces should be pre-configured.		

Subject Focus	User accounts and sharing permissions		
LO 13.	Share files and devices on a network.		
K-27.	K-27. List different local user accounts.	K-27. Describe the purpose of different local user accounts.	K-27. Outline the advantages and disadvantages of online user accounts.
	<p>Local user accounts: e.g. administrator, standard, guest.</p> <p>Online user accounts:</p> <ul style="list-style-type: none"> • Advantages: e.g. synchronisation between computer systems, online storage, access to files saved on other devices; • Disadvantages: e.g. privacy of information, security issues with Single Sign-On (SSO), dependency on internet connection. 		
K-28.	K-28. List different types of file and folder sharing permissions.	K-28. Outline file and folder sharing permissions.	K-28. Explain why file and/or folder sharing permission/s are appropriate or not for a given situation/s.
	<p>File and folder sharing permissions: e.g. read, write, read and execute, modify, full control, list folder contents.</p> <p>N.B. For assessment purposes, both file and folder sharing permissions should be considered.</p>		
A-8.	A-8. Create a local user account.	A-8. Share a device between computers.	A-8. Share a file/folder between computers.
	<p>Creation of a local user account: access user accounts window; select appropriate account; set account name; create new account; create password.</p>		
	<p>Sharing a device: setup sharing settings; share device; add device to another account set on a different computer system; test that device has been successfully shared.</p>		
<p>Sharing a file/folder: locate file/folder to be shared; share file/folder; set appropriate sharing permissions; access file/folder from another account set on a different computer system; test sharing permissions from other account.</p>			

Subject Focus	Network security		
LO 14.	Setup security measures.		
K-29.	K-29. List network security threats.	K-29. State protection measures for a networked device.	K-29. Outline protection measures for a wireless network.
	Security threats: e.g. malware, botnet, hacking, denial of service attack, phishing, spam.		
	Networked device protection measures: e.g. firewall, anti-malware, restore point, security updates, disk freezing, sand boxing, backups.		
Wireless network protection measures: e.g. WPA, WPA2, WEP, hide SSID, MAC address filtering, access point username and password, update access point firmware, turn off Wi-Fi Protected Setup (WPS).			
C-12.	C-12. State different repercussions of an unsecured network for a given scenario.	C-12. Explain different repercussions of an unsecured network for a given scenario.	C-12. Justify protection measures to secure a network for a given scenario.
	Repercussions of unsecured network: e.g. identity and personal information theft, criminal activity using your network, stealing of bandwidth, stealing of data, use of unauthorised hardware, deleting of data.		
	Justification of protection measures to secure a network: e.g. effectiveness, ease of installation.		
A-9.	A-9. Protect a device using a third-party internet security suite.	A-9. Modify firewall settings to block a website.	A-9. Protect a wireless router from unauthorised access.
	Protection of device: install third-party internet security suite; check for software updates; run a quick system scan; remove threat from an external storage device.		
	Firewall settings to block a website: add website to block list; test that website has been blocked.		
Protection of a wireless router from unauthorised access: change router admin username and password; change network name (SSID); activate wireless security (WEP/WPA/WPA2); filter by MAC address.			

Learning Outcomes and Assessment Criteria

Subject Focus:	Computer networks
Learning Outcome 11:	Demonstrate an understanding of computer networks and data transmission media.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-21. List the elements that make up a network.	K-21. State the purpose of a network.	K-21. Outline the use of networks in different places.	C-11. Identify the best type of network for a given scenario.	C-11. Justify the best type of network for a given scenario.	C-11. Justify the appropriate data transmission medium for a given scenario.			
K-22. Name different types of networks.	K-22. Outline different types of networks based on geographical area.	K-22. Differentiate between client-server and peer-to-peer architectures.						
K-23. State different types of data transmission signals.	K-23. Categorise data transmission media as wired or wireless.	K-23. Outline limitations of data transmission media.						

Subject Focus:	Protocols and networking hardware components
Learning Outcome 12:	Setup a small-scale local area network.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-24. List different network protocols.	K-24. Identify whether network protocols are secure or not.	K-24. Outline the use of different network protocols.						
K-25. Identify network devices symbols.	K-25. Classify different network devices.	K-25. Outline the use of different intermediate network devices.				A-7. Prepare a CAT5e/6 cable for crimping.	A-7. Crimp a CAT5e/6 cable.	A-7. Connect two wired networks via a router using cables.
K-26. Categorise addresses as IPv4, IPv6 and MAC addresses.	K-26. Outline the use of static and dynamic IP addressing.	K-26. Differentiate between IP addressing and MAC addressing.						

Subject Focus:	User accounts and sharing permissions
Learning Outcome 13:	Share files and devices on a network.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-27. List different local user accounts.	K-27. Describe the purpose of different local user accounts.	K-27. Outline the advantages and disadvantages of online user accounts.						
K-28. List different types of file and folder sharing permissions.	K-28. Outline file and folder sharing permissions.	K-28. Explain why file and/or folder sharing permission/s are appropriate or not for a given situation/s.				A-8. Create a local user account.	A-8. Share a device between computers.	A-8. Share a file/folder between computers.

Subject Focus:	Network security
Learning Outcome 14:	Setup security measures.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)	Assessment Criteria (Level 1)	Assessment Criteria (Level 2)	Assessment Criteria (Level 3)
K-29. List network security threats.	K-29. State protection measures for a networked device.	K-29. Outline protection measures for a wireless network.	C-12. State different repercussions of an unsecured network for a given scenario.	C-12. Explain different repercussions of an unsecured network for a given scenario.	C-12. Justify protection measures to secure a network for a given scenario.	A-9. Protect a device using a third-party internet security suite.	A-9. Modify firewall settings to block a website.	A-9. Protect a wireless router from unauthorised access.

Appendix 1 – Minimum Required Resources

This list is not intended to be exhaustive. These resources should be available for at least 16 candidates.

Common

Computer lab/workshop with electrical power outlets, projector, sound system and work-station tables

Internet access

Lockable storage cabinets to store candidates' work, tools and consumables

16 x 4GB USB flash drives (one per candidate)

1 x A4 colour printer

1 x external storage hard disk

2 x digital video cameras complete with external storage and tripod

Health and Safety equipment including First Aid box and fire extinguisher

Unit 1

Hardware

16 x functional old computers (such as Dual Core and above) with mice, keyboards and monitors

16 x computer repair tool-kit including different screwdrivers, such as Phillips and flat head screwdrivers, and tweezers (one per candidate)

16 x screw organisers or screw tubes including screws (one per candidate)

8 x anti-static bench mats (one per two candidates)

16 x anti-static wrist bands and earthing leads (one per candidate)

Compressed air cans or a mini air compressor

Rubbing alcohol

Compound pastes

4 x USB and LAN cable testers

16 x RAM, CPU and heat sink, hard disk drives, optical disk drives, graphics cards, sound cards, wireless network cards, USB port extenders, and Power Supply Units

Hardware components (not necessarily functional) which are **NOT** compatible with computer systems to be used for Replacement/Installation/Upgrade (RIU)

Software

A recent Operating System e.g. Windows 10 plus Key for installation

Diagnostic software tool e.g. CPU-Z, Speccy

Unit 2

Hardware

16 x functional computers, which support image and video editing, with mice, keyboards, monitors and speakers

Software

Image editing software e.g. GIMP, pixlr

Video editing software e.g. Shotcut, Lightworks

Website editing software e.g. Brackets, OpenElement

Unit 3

Hardware

16 x functional computers with network ports, mice, keyboards and monitors (ideally with wireless NICs)

Sample fibre optic cables and connectors e.g. ST, SC

Sample coaxial cables and connectors e.g. BNC, RG6

Network cable roll e.g. CAT5e or CAT6

RJ-45 connectors

8 x universal side cutters (one per two candidates)

8 x wire stripper pliers (one per two candidates)

8 x network cable crimping pliers (one per two candidates)

4 x LAN cable testers

8 x wireless routers (including wired interfaces)

4 x wireless access points

2 x wireless devices such as smartphones, tablets or laptops

4 x printers (or any other devices) to be shared on the network

Software

Internet Security Suite e.g. Avast, Comodo

Appendix 2 – Portfolio Marking Schemes

PART 1 – BASED ON ANY TWO APPLICATION CRITERIA FROM UNIT 1				Criterion 1 Marks	Criterion 2 Marks	Total Marks
Overview of Application Process	1 – 3 marks	4 – 6 marks	7 – 10 marks	/10	/10	/20
	Steps required as part of the overall process to complete the whole criterion are provided – without any details or elaboration – but most are missing, incorrect, or not necessarily in logical order.	The main steps required as part of the overall process to complete the whole criterion are provided – including some detail or elaboration – but some are missing, incorrect, or not necessarily in logical order.	Most of, or all, the main steps required as part of the overall process to complete the whole criterion are correctly provided – including necessary details or elaboration – and in a logical order.			
Supporting Evidence	1 – 2 marks	3 – 4 marks	5 – 7 marks	/7	/7	/14
	The submitted photo evidence only shows the final work or artifact. Linking to supporting evidence does not exist or is inconsistent.	The submitted photo evidence shows some steps and the final work or artifact. Linking to supporting evidence is overall consistent.	The submitted photo evidence shows most of, or all, the main steps and the final work or artifact, using proper captions. Linking to supporting evidence is consistent throughout.			
Overview of Skills	1 – 3 marks	4 – 6 marks	7 – 10 marks	/10	/10	/20
	Underlying skills employed to complete the criterion are provided – without any details or elaboration – but most are missing or incorrect.	The main underlying skills employed to complete the criterion are provided – including some details or elaboration – but some are missing or incorrect.	Most of, or all, the main underlying skills employed to complete the criterion are correctly provided – including necessary details or elaboration.			
Presentation	1 mark	2 – 3 marks	4 – 6 marks			/6
	The material submitted for this part of the Portfolio generally follows the template, but the overall presentation is poor and/or inconsistent.	The material submitted for this part of the Portfolio follows the template, and the overall presentation is good and consistent.	The material submitted for this part of the Portfolio follows the template, and the presentation is excellent and consistent throughout. A proper Table of Contents is also included.			
TOTAL PART 1 MARK						/60

PART 2 – BASED ON ANY TWO APPLICATION CRITERIA FROM UNIT 2				Criterion 1 Marks	Criterion 2 Marks	Total Marks
Overview of Application Process	1 – 3 marks	4 – 6 marks	7 – 10 marks	/10	/10	/20
	Steps required as part of the overall process to complete the whole criterion are provided – without any details or elaboration – but most are missing, incorrect, or not necessarily in logical order.	The main steps required as part of the overall process to complete the whole criterion are provided – including some detail or elaboration – but some are missing, incorrect, or not necessarily in logical order.	Most of, or all, the main steps required as part of the overall process to complete the whole criterion are correctly provided – including necessary details or elaboration – and in a logical order.			
Supporting Evidence	1 – 2 marks	3 – 4 marks	5 – 7 marks	/7	/7	/14
	The submitted photo evidence only shows the final work or artifact. Linking to supporting evidence does not exist or is inconsistent.	The submitted photo evidence shows some steps and the final work or artifact. Linking to supporting evidence is overall consistent.	The submitted photo evidence shows most of, or all, the main steps and the final work or artifact, using proper captions. Linking to supporting evidence is consistent throughout.			
Overview of Skills	1 – 3 marks	4 – 6 marks	7 – 10 marks	/10	/10	/20
	Underlying skills employed to complete the criterion are provided – without any details or elaboration – but most are missing or incorrect.	The main underlying skills employed to complete the criterion are provided – including some details or elaboration – but some are missing or incorrect.	Most of, or all, the main underlying skills employed to complete the criterion are correctly provided – including necessary details or elaboration.			
Presentation	1 mark	2 – 3 marks	4 – 6 marks			/6
	The material submitted for this part of the Portfolio generally follows the template, but the overall presentation is poor and/or inconsistent.	The material submitted for this part of the Portfolio follows the template, and the overall presentation is good and consistent.	The material submitted for this part of the Portfolio follows the template, and the presentation is excellent and consistent throughout. A proper Table of Contents is also included.			
TOTAL PART 2 MARK						/60

PART 3 – BASED ON ONE UNIT 3 APPLICATION CRITERION AND SELF-EVALUATION				Total Marks
Overview of Application Process	1 – 3 marks	4 – 6 marks	7 – 10 marks	/10
	Steps required as part of the overall process to complete the whole criterion are provided – without any details or elaboration – but most are missing, incorrect, or not necessarily in logical order.	The main steps required as part of the overall process to complete the whole criterion are provided – including some detail or elaboration – but some are missing, incorrect, or not necessarily in logical order.	Most of, or all, the main steps required as part of the overall process to complete the whole criterion are correctly provided – including necessary details or elaboration – and in a logical order.	
Supporting Evidence	1 – 2 marks	3 – 4 marks	5 – 7 marks	/7
	The submitted photo evidence only shows the final work or artifact. Linking to supporting evidence does not exist or is inconsistent.	The submitted photo evidence shows some steps and the final work or artifact. Linking to supporting evidence is overall consistent.	The submitted photo evidence shows most of, or all, the main steps and the final work or artifact, using proper captions. Linking to supporting evidence is consistent throughout.	
Overview of Skills	1 – 3 marks	4 – 6 marks	7 – 10 marks	/10
	Underlying skills employed to complete the criterion are provided – without any details or elaboration – but most are missing or incorrect.	The main underlying skills employed to complete the criterion are provided – including some details or elaboration – but some are missing or incorrect.	Most of, or all, the main underlying skills employed to complete the criterion are correctly provided – including necessary details or elaboration.	
Self-Evaluation	1 – 8 marks	9 – 16 marks	17 – 27 marks	/27
	One soft and one technical skill gained throughout the subject are evaluated in relation to personal growth or future employment in industry. The arguments linking the skills gained with their contribution towards personal growth or future employment are generic or weak.	Various soft and technical skills gained throughout the subject are evaluated in relation to personal growth and future employment in industry. The arguments linking the skills gained with their contribution towards personal growth and future employment are valid, but some are not properly developed.	Various soft and technical skills gained throughout the subject are evaluated in relation to personal growth and future employment in industry. Most of, or all the arguments linking the skills gained with their contribution towards personal growth and future employment are properly developed.	
Presentation	1 mark	2 – 3 marks	4 – 6 marks	/6
	The material submitted for this part of the Portfolio generally follows the template, but the overall presentation is poor and/or inconsistent.	The material submitted for this part of the Portfolio follows the template, and the overall presentation is good and consistent.	The material submitted for this part of the Portfolio follows the template, and the presentation is excellent and consistent throughout. A proper Table of Contents is also included.	
TOTAL PART 3 MARK				/60