L-Università ta' Malta

SEC 39 Syllabus

Information Technology

2026

SEC39 Information Technology
Syllabus Addendum
Updates for the 2026 MATSEC Examinations Session

Changes in Subject Content	Content of Unit 3 **K4, K7, C2** and **C4** may not be covered.
Changes in Coursework	Unit 3: No changes.
Changes in Exam Paper(s)	The Unit 3 Controlled assessment will not include **K4, K7, C2** and **C4**. Marks for these criteria, which shall not be assessed, will be prorated at the end of the unit based on the combined performance in Knowledge and Comprehension criteria within the same unit.

Table of Contents

Introduction

The aim of this learning and assessment programme is to assist secondary schools to manage vocational programmes, specifically in the planning and implementation of the programme delivery.

This learning and assessment programme is structured in two parts, namely:

Part A: General Policies

Part B: Unit Specifications

In Part A, the Learning Outcomes of the programme are explained. Important terms used in the Learning and Assessment Programme (LAP) are defined.

In Part B, the content to be covered in each unit is provided. The learning outcomes together with a brief description are also specified. The assessment criteria together with the scheme of assessment are presented in this part of the document.

In order to ensure effective implementation of the programme, adequate standards, quality assurance processes and procedures have to be adopted. Additionally, policies, guidelines and strategies related to assessment practices are documented in the SEC Vocational Subjects Policy Document. Standard templates will also be provided and will be structured as follows:

List of Templates
Teacher's Timeframe
Assignment Brief Front Sheet
Record of Internal Verification – Assignment Brief
Record of Internal Verification – Assessment Decision
External Verification Report Template
Unit Tracking Sheet Template

Part A: General Policies

Introduction

The aim of the vocational programme in Information Technology (IT) is to provide candidates with the underpinning knowledge related to the IT industry. By the end of the programme, candidates 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 1. Describe different types of multimedia systems.

LO 2. Modify and create digital images and animations.

LO 3. Use video editing software to develop an audio-visual production.

LO 4. Plan and design a website according to specific requirements.

Unit 3: Networking

At the end of the unit, I can:

LO 1. Demonstrate an understanding of computer networks and data transmission media.

LO 2. Setup a small scale local area network.

LO 3. Share files and devices on a network.

LO 4. Setup security measures.

Programme Descriptors

Programme descriptors are understood as outcome statements of what a candidate is expected to have achieved by the end of the programme. These are an adaptation of MQF level descriptors for the specific programme.

Overview

MQF Level 1	MQF Level 2	MQF Level 3
Basic general IT related **knowledge**. 1. Acquires basic general knowledge related to the immediate IT environment and expressed through a variety of simple tools and context as an entry point to lifelong learning; 2. Knows and understands the steps needed to complete simple tasks and activities in an IT environment; 3. Is aware and understands basic IT tasks and instructions; 4. Understands basic IT textbooks and instruction guides.	Basic factual **knowledge** of the IT fields of work or study. 1. Possess good knowledge of the IT field of work or study; 2. Is aware and interprets IT related information and ideas; 3. Understands facts and procedures in the application of basic IT related tasks and instructions; 4. Selects and uses relevant IT knowledge to accomplish specific actions for self and others.	**Knowledge** of facts, principles, processes and general concepts in the IT field of work or study. 1. Understands the relevancy of theoretical knowledge and information related to the IT field of work or study; 2. Assesses, evaluates and interprets facts, establishing basic principles and concepts in the IT field of work or study; 3. Understands facts and procedures in the application of more complex IT tasks and instructions; 4. Selects and uses relevant IT knowledge acquired on one's own initiative to accomplish specific actions for self and others.

MQF Level 1	MQF Level 2	MQF Level 3
Basic **skills** required to carry out simple IT related tasks. 1. Has the ability to apply basic IT knowledge and carry out a limited range of simple tasks; 2. Has basic repetitive communication skills to complete well defined IT routine tasks and identifies whether actions have been accomplished; 3. Follows instructions and be aware of consequences of basic actions for self and others.	Basic cognitive and practical **skills** required to use relevant IT information in order to carry out tasks and to solve IT related routine problems using simple rules and tools. 1. Has the ability to demonstrate a range of skills by carrying out a range of complex IT related tasks within the IT field of work or study; 2. Communicates basic IT related information; 3. Ensures IT related tasks are carried out effectively.	A range of cognitive and practical **skills** required to accomplish IT related tasks and solve IT related problems by selecting and applying basic methods, tools, materials and information. 1. Demonstrates a range of developed IT skills to carry out more than one complex IT related task effectively and in unfamiliar and unpredictable IT contexts; 2. Communicates more complex IT information; 3. Solves basic IT related problems by applying basic methods, tools, materials and information given in a restricted learning environment.
Work out or study under Direct Supervision in a structured IT context. 1. Applies basic IT knowledge and skills to do simple, repetitive and familiar tasks; 2. Participates in and takes basic responsibility for the action of simple IT tasks; 3. Activities are carried out under guidance and within simple defined timeframes; 4. Acquires and applies basic IT key competences at this level.	Work or study under supervision with some autonomy. 1. Applies factual IT knowledge and practical skills to do some structured tasks; 2. Ensures one acts pro-actively; 3. Carries out IT related activities under limited supervision and with limited responsibility in a quality controlled IT context; 4. Acquires and applies basic IT key competences at this level.	Take responsibility for completion of IT related tasks in work or study and adapt own behaviour to circumstances in solving IT problems. 1. Applies IT knowledge and skills to do some IT tasks systematically; 2. Adapts own behaviour to circumstances in solving IT related problems by participating pro-actively in structured IT learning environments; 3. Uses own initiative with established responsibility and autonomy, but is supervised in quality controlled learning environments, normally in an IT environment; 4. Acquires IT key competences at this level as a basis for lifelong learning.

Definitions/Terminology

Term	Definition
Assessment Criteria	A description of what a candidate is expected to do in order to demonstrate that a learning outcome has been achieved.
Assessor	The person responsible to grade the candidate's work, issue a mark and determine the candidate's final grade.
Competences	Each competence is defined as a combination of knowledge and skills and is associated with the level of autonomy and responsibility that the person is expected to have at that level.
Controlled Assessment	An assessment set by MATSEC which may include written and/or practical tasks as specified in the syllabus. This may be a take-home assessment or carried out under controlled conditions.
Coursework	A number of assignments set by teachers and given to the candidate during the course as specified in the syllabus.
Knowledge	Knowledge refers to the understanding of basic, factual and theoretical information, which is traditionally associated with formal learning but can also be acquired from informal and non-formal learning.
Learning Outcome	Learning Outcomes are statements which describe what a qualification represents in terms of knowledge, skills and competences. The Malta Qualifications Framework (MQF) defines a learning outcome as what the candidate understands and is capable of doing at the end of the learning process.
Malta Qualification Framework	The Malta Qualifications Framework (MQF) provides an indication of the level of difficulty as a benchmark for a qualification, which needs to be assigned a level and mapped to the framework. The MQF has level descriptors from Level 1 to 8. The level descriptors are useful for education and training providers as they describe the Knowledge, Skills and Competences and a set of Learning Outcomes, which indicate to the candidate the end of a learning process.
Quality Assurance	A continuous process to assure the standards and quality of the learning assessment programme.
Sample of Work	A sample of work is a percentage of the candidate's work gathered as a representative sample for the internal or external verifier.
Skills	Skills imply the application of acquired knowledge and understanding in different contexts. A skill may be the result of formal learning or of repetitive work in an informal setting.
Synoptic Assessment	An assessment in the form of a written examination and conducted under controlled conditions covering all learning outcomes and the majority of Knowledge and Comprehension assessment criteria in a given unit.
Unit Content	The unit content is the content required to be communicated and given to the candidate per learning outcome. Each learning outcome must have content related to it, which content must be delivered to provide the candidate with the tools necessary to achieve that outcome.

Assessment Scope

Assessment is an important element in any learning process. This should inform candidates about their achievements and at the same time it should meet important conditions of reliability, validity and fairness. Thus, important rules and procedures must be adhered-to. In particular, the assessment regulations and procedures that are explained in this section will ensure that assessments are:

- Of the required standard, quality and level;
- Fair for all candidates;
- Valid and reliable.

Each unit will be assessed by means of three assignments, one of which must be an assessment conducted within a controlled school environment. The assessment mode/type, criteria to be assessed and the distribution of marks are explained in Part B of the programme as part of the unit specifications.

Quality Assurance

An important aspect of this programme is the quality assurance process that must be conducted throughout the implementation of the programme. Three main processes are to be conducted as stipulated in the table below.

Internal Verification of Assessment Briefs	All assessment briefs are to be internally verified before being issued to the candidates. Within this process, important checks relating to learning outcomes, criteria to be assessed, validity and reliability are to be performed.
Internal Verification of Assessment Decisions	Once candidates complete their work, and their assessments have been corrected, a representative sample of candidates' work is to be internally verified.
External Verification	The process of external verification will ensure that programme quality and standards are met.

Part B: Unit Specifications

Introduction

This part of the programme guide provides detailed specification for each of the 3 units that are to be implemented for the successful completion of the programme. The curriculum design adopted for the development of the units of study is based on the learning outcomes approach. The latter can be defined as "written statements of what a candidate should be able to do/know/apply by the end of the learning process."[1]

The structure of the unit specifications is presented below:

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┌─────────────────────────────┐
│        Unit Title           │
└─────────────────────────────┘

┌─────────────────────────────┐
│      Unit Description        │
└─────────────────────────────┘

┌─────────────────────────────┐
│      Learning Outcomes       │
└─────────────────────────────┘

┌─────────────────────────────┐
│        Unit Content          │
└─────────────────────────────┘

┌─────────────────────────────┐
│     Assessment Criteria      │
└─────────────────────────────┘

┌─────────────────────────────┐
│    Scheme of Assessment      │
└─────────────────────────────┘
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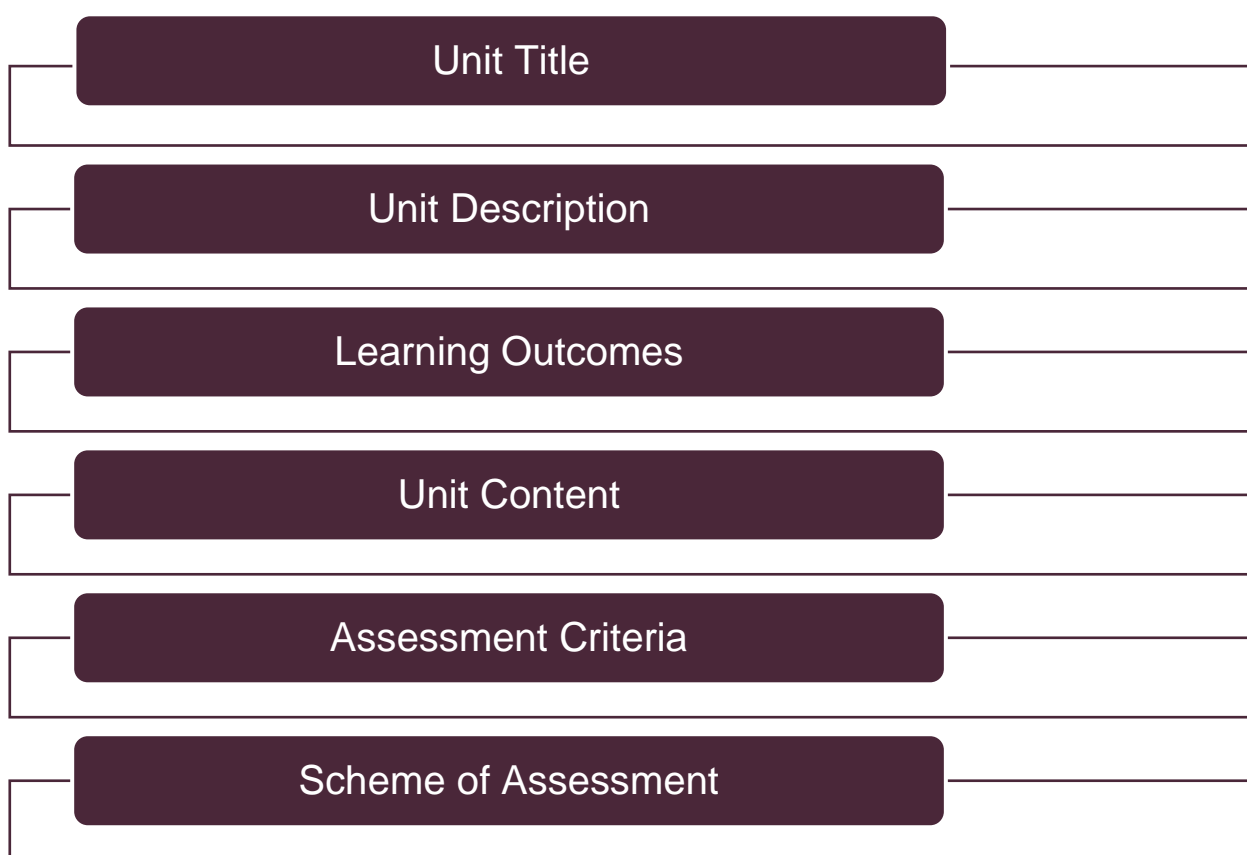
Interpreting the Unit Specifications

The syllabus is written in a way whereby the knowledge criteria at MQF level 3 build upon the knowledge criteria at MQF level 2 and in the same manner the knowledge criteria at MQF level 2 build upon the knowledge criteria at MQF level 1. The same applies for the comprehension and application criteria. The comprehension criteria also build upon the knowledge criteria and the application criteria build upon the knowledge and the comprehension criteria.

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[1] http://www.cedefop.europa.eu/files/4156_en.pdf

The document is an assessment syllabus; therefore any other examples or information apart from those written in the unit content should be taught so that candidates will enjoy the learning process and get a general overview of the subject. Under each grading criterion, only the **minimum** content that has to be covered is listed. The material covered in class must at least reflect **both** the unit content and grading criteria.

Examples (e.g.), commas, semi-colons, bullets, or, and N.B. are used in the Learning and Assessment Programme. When semi-colons are used the candidates should be assessed on all the content prescribed. However, when the list is headed with example (e.g.), all the content is to be covered but candidates are to be assessed on more than 50% of the content prescribed for that grading criterion. Where bullets are present, marks allocated for the criterion should be equally distributed. Where 'or' is present, only one of the listed items should be assessed. Where an 'N.B.' is present, important information regarding the assessment is given.

Where the plural is used in grading criteria (e.g. types, aspects, etc.), at least two answers are expected. Unless indicated otherwise in the unit content, when assignments are written, the criteria assessed should build on each other.

In each grading criterion there is a command verb which determines the type of answers expected by the student, such as list, identify, outline, describe, explain, etc… These verbs are defined in the glossary of verbs available on the MATSEC website. It is of vital importance that the command verbs specified in the grading criteria remain unchanged in the assignment brief.

Unit 1: Computer Hardware Installation

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.

Unit Content

Subject Focus	Health and Safety on the workplace
LO 1.	Demonstrate an understanding of good practices on the workplace.
K-1.	Hazards: e.g. high voltage, high electrostatic energy, high magnetism, sharp objects, trailing cables, lifting heavy objects, precarious positioning of equipment.
	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.	Signs: e.g. high voltage, toxic, environmental hazard, laser beam, no food/drink, no loose clothing, ESD, fire extinguisher, fire exit.
	N.B. For assessment purposes at MQF 2, marks should only be awarded for each sign being assessed if it is properly categorised with ALL hazards it relates to, as per Unit Appendix.
C-1.	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).
	Implementation costs: e.g. antistatic equipment, tools, firefighting equipment, regular backups, premises insurances, employee insurances.

Subject Focus	Computer systems
LO 2.	Describe different types of computer systems.
K-3.	Computer systems: e.g. server, desktop computer, laptop, tablet, e-book reader, gaming rig, smartphone, embedded device, wearable.
	Input devices and output devices: • Input device: mouse **or** trackball **or** scanner **or** touchpad **or** keyboard **or** Braille keyboard **or** eye-tracking system **or** puff-suck switch **or** joystick **or** joypad **or** microphone **or** 3D-scanner **or** buttons **or** dedicated sensors **or** dedicated control panel **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.
	Data flow block diagram: • Input; • Process: e.g. Arithmetic Logic Unit(ALU), Control Unit(CU), Memory Unit(MU); • Output; • Secondary storage; • Flow of data/control.

C-2.	Justification of a computer system: e.g. cost, speed, portability.
	Justification of input and output devices: use **and/or** specifications **and/or** connectivity **and/or** cost **and/or** after-sales service. **N.B.** *For assessment purposes, the justification should be based on TWO aspects for input devices and TWO aspects for output devices. The same aspect could be used for both input and output.*
	Justification of storage requirements: e.g. storage technology (magnetic, optical, electronic), capacity, access speed, longevity of device, costs, portability. **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.*
A-1.	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; choose the create button; 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-4	Internal hardware components: e.g. RAM, CPU, heat sink, hard disk, graphics card, sound card, network card, power supply unit.
	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.	Components: RAM; CPU with heat sink; secondary storage devices; expansion cards; Power Supply Unit (PSU).
	Justification based on: compatibility and specifications in relation to use.
	Differences in technologies: types of RAM (dynamic [DDR-x]) **or** types of CPU (integrated, socket type, generation) **or** types of heat sink (active, passive) **or** types of secondary storage interface (SATA, PATA, M.2) **or** types of expansion slots (AGP, PCI, PCIe, M.2).

Subject Focus	Installation of internal hardware components
LO 4.	Install (RIU) internal hardware components and configure the necessary software.
K-5.	Steps to enter the BIOS/UEFI: switch on computer; press appropriate function key while booting.
	Features of the BIOS/UEFI: e.g. CMOS, BIOS, chipset, peripherals, power management, health status, passwords, load fail-safe defaults.
K-6.	Issues causing unsuccessful RIU: e.g. loose or wrongly inserted connections, internally broken cables, dead-on-arrival (DOA) components.
	Confirmation of RIU issues: e.g. test suspected components on a working computer system, test suspected cables on a working computer system, test suspected cables with a cable tester, check for loose connections, check for bent pins, check for connections in correct port.
	Solutions for unsuccessful RIU: e.g. secure cable connections, connect cable in appropriate port, place component in appropriate slot, replace damaged cable with a working one, replace DOA component with new one, consult with mainboard manual for solutions.
C-4.	Possible boot-up error report hardware problems: power-related **or** CPU-related **or** mainboard-related **or** adapter card related.
	N.B. *For assessment purposes, boot-up error reports should take into consideration beep codes and/or POST test readouts.*
A-2.	Health and Safety procedures while installing hardware: wear appropriate clothing; switch off power; disconnect plug; remove power cable; disconnect remaining computer cables from computer; ensure workplace is large enough; place components on antistatic mat; open case carefully; look out for sharp edges; wear antistatic wrist strap; be organized; handle tools safely.
	Preparation to carry out hardware RIU: tools; anti-static and 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.	Ways to test an RIU: e.g. BIOS, device manager, third-party diagnostic tools.
K-8.	RIU documentation sections: reason for the RIU; solution proposed; actual implementation; testing; signatories and date.
	Importance of documentation: record keeping of work done; warranties of any components; completed test plan; reference point for troubleshooting.
K-9.	Registration: inform manufacturer of the product installed; inform manufacturer of personal details.
	Methods: online; by post.
	Advantages: e.g. hardware updates, software updates, technical assistance, proof of purchase, service level agreement, promotional offers.
A-3.	Test plan for RIU components based on: e.g. BIOS, system information, device manager, third-party diagnostic tools. *N.B. For assessment purposes, candidates should specify what shall be tested through the tests (e.g. when installing a network card the device manager will be used to check whether it has been recognised).*
	Testing RIU components: **TWO** tests for component 1; **TWO** tests for component 2; tests carried out according to test plan. *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.*
	Documentation of upgrade: reason/s for RIU; suggested RIU; actual implementation; 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.	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.	Scenarios in relation to maintenance: • 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 (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 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 minimize potential risks.*	C-1. Outline the consequences if the necessary precautions are not addressed when RIU hardware components.	C-1. Determine the costs involved when good practices are not observed when RIU hardware components.	C-1. Analyse the costs incurred to implement these precautions against the cost of the hazard.			
K-2. Match the different safety signs present in an IT environment with their respective meaning.	K-2. Categorize different safety signs into human, hardware and environment hazards.	K-2. Determine the placement of suitable 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 (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-3. List different types of computer systems.	*K-3. Select appropriate input and output devices for a given situation.*	*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 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.

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 (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-4. Label different internal hardware components.	*K-4. List the reasons for which a computer upgrade may be required.*	*K-4. Outline the implications of upgrading a computer.*	C-3. Choose compatible components for a given mainboard and user requirements.	C-3. Justify the chosen components for a given mainboard and user requirements.	C-3. Discuss differences between alternative technologies for a given component.			

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 (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-5. Present the steps to enter the BIOS/UEFI.	K-5. Mention the basic features of the BIOS/UEFI.	K-5. Outline the content of the basic features of the BIOS/UEFI.	C-4. Identify the hardware problem that has generated a given boot-up error report.	C-4. Describe possible causes that have generated a given boot-up error report.	C-4. Explain possible solutions to solve the generated boot-up error.	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.
K-6. List issues which can cause an RIU to be unsuccessful.	*K-6. State ways to confirm issues which can cause an RIU to be unsuccessful.*	*K-6. Outline a solution to each cause of unsuccessful RIU.*						

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

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-7. List different ways which can be used to test an RIU.	K-7. Describe ways which can be used to test an RIU.	K-7. Outline examples for the different ways which can be used to test 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 upgrade.
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 (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 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.			

Assessment Criteria

Assessment criteria provide guidance on how the candidates will be assessed in order to ensure that the learning outcomes have been achieved.

To achieve each outcome a candidate must satisfy the assessment criteria listed in the previous table. The assessment criteria which will be assessed in the controlled assessment have been highlighted.

Scheme of Assessment

Assignment Number	Assignment Type	Percentage distribution
1	Coursework	26 - 34%
2	Coursework	26 - 34%
3	Controlled	38 - 42%

Distribution of Marks

Criteria	MQF Level 1 Marks	MQF Level 2 Marks	MQF Level 3 Marks	Totals
Knowledge	1	1	2	4
Comprehension	2	2	2	6
Application	3	3	4	10

Unit Appendix – Safety Signs found in an IT Environment

Safety Sign	Safety Sign Name	Human Hazard	Hardware Hazard	Environment Hazard
	High voltage	✓	✓	
	Toxic	✓		✓
	Environmental hazard			✓
	Laser beam	✓		
	No food or drink	✓	✓	✓
	No loose clothing	✓	✓	
	ESD		✓	
	Fire extinguisher	✓	✓	✓
	Fire exit (Emergency exit/escape route)	✓		

Unit 2: Multimedia Systems and Basic Website Design

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 1. Describe different types of multimedia systems.

LO 2. Modify and create digital images and animations.

LO 3. Use video editing software to develop an audio-visual production.

LO 4. Plan and design a website according to specific requirements.

Unit Content

Subject Focus	Multimedia systems
LO 1.	Describe different types of multimedia systems.
K-1.	Types of Media: e.g. text, images, audio, video, animation, ABS/PLA filaments.
	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-1.	Multimedia Systems: websites **or** gaming **or** social media **or** CAD **or** CBT **or** virtual reality **or** holograms **or** information kiosks **or** simulations.
	Justifications based on: e.g. audience, costs (I/O devices, software availability), time-limitation.
	Modifications based on changes in: audience **or** costs **or** I/O devices **or** software availability **or** time-limitation.

Subject Focus	Images and animations
LO 2.	Modify and create digital images and animations.
K-2.	Image characteristics: e.g. compression (uncompressed/lossy/lossless), colour depth, compatibility, image size, resolution (ppi, dpi), vector/raster.
	Image formats: BMP **or** JPEG **or** GIF **or** PNG **or** WebP **or** SVG **or** PSD **or** XCF **or** HEIC/HEIF.
K-3.	Image effects: e.g. brightness, contrast, gamma, hue, saturation, colour balance, sketch, transparency (opacity).
	Intensities: minimum image effect intensity; maximum value of image effect intensity.
C-2.	Selection, justification and comparison of image formats based on: e.g. compression (uncompressed/lossy/lossless), colour depth, compatibility, image size, resolution (ppi, dpi), vector/raster.
A-1.	Planning: storyboard; set image size; import images from web and/or secondary storage and/or digital camera and/or mobile device.
	Edit images: create/copy/delete layers; add text to layers; add layer effects.
	Animation: contains a minimum of 20 frames; create an original image; appropriate delay between transitions; exportation.

Subject Focus	Audio and video production
LO 3.	Use video editing software to develop an audio-visual production.
K-4.	Audio file characteristics: bitrate; compression (lossy/lossless/uncompressed).
	Audio file types: e.g. FLAC, ALAC, LPCM, WAV, AAC, MP3.
K-5.	Video file characteristics: e.g. compression (lossy/lossless/uncompressed), bitrate, frame rate, aspect ratio, frame dimensions, duration (length).
	Video file types: FLV **or** MPEG4 **or** WebM (VP8, VP9) **or** mkv **or** ogg **or** avi.
K-6.	Characteristics: subtitles; chapters; variable bitrate; variable frame rate; video coding formats; audio coding formats; menus; streaming; 3D support; hardware playback enabled.
	Containers: AVI **or** DivX **or** FLV **or** MP4 **or** Matroska **or** ogg **or** Quicktime.
C-3.	Limitations and justifications based on: e.g. bitrate, frame rate, file size, compatibility, costs, aspect ratio.
A-2.	Planning: video sequence; sound; text.
	Production: different videos clips; sound (background music, narration); text; aspect ratio.
	Special effects and exportation: transitions; audio effect; video effect/filter; frame rate; video exported in an appropriate format.

Subject Focus	Website development
LO 4.	Plan and design a website according to specific requirements.
K-7.	Elements: navigation menu; header; footer; main content (this includes images, videos, forms, paragraphs, lists, tables).
K-8.	Tools: • static websites tools: e.g. HTML, CSS, JavaScript; • dynamic websites tools: e.g. HTML, database, server-side scripting (PHP/ASP.NET).
K-9.	Tags: e.g. • HTML basic tags: e.g. HTML, head, title, link, body, p, h, a; • HTML element tags: e.g. br, hr, img, !--, ul, ol, li, table (th, tr, td), div; • HTML 5 tags: e.g. article, aside, dialog, figure, footer, header, main, nav, section.
	Attributes: e.g. href, rel, target, id, class, source, alt.
K-10.	CSS usage: control over layout and presentation of HTML; separate design from content.
	Types of CSS: e.g. external, internal, inline.
	CSS selectors and declaration: e.g. . (dot), #, *, *element*, display, width, height, margin, padding, border, float, color, background, font.
C-4.	Scenarios: commercial **or** educational **or** e-government **or** entertainment **or** Learning Management System (LMS) **or** Content Management System (CMS).
	Arguments based on: e.g. page type (.html or .php or .asp), changing content over time, search box.
C-5.	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-3.	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 1:	Describe different types of multimedia systems.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-1. List the different types of media.	*K-1. Relate the different types of media with the human senses.*	*K-1. Identify the hardware required for specific media.*	C-1. Select a multimedia system for a given scenario.	C-1. Justify the most appropriate multimedia system for a given scenario.	C-1. Suggest how a multimedia system can be modified to cater for new requirements.			

Subject Focus:	Images and animations
Learning Outcome 2:	Modify and create digital images and animations.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-2. State the main characteristics of image formats.	*K-2. Identify the characteristics of an image format.*	*K-2. Describe the characteristics of an image format.*	C-2. Select an appropriate image format for a particular scenario.	C-2. Justify the image format for a particular scenario.	C-2. Compare and contrast between two images of different characteristics.	A-1. Plan a simple animation for a particular scenario.	A-1. Use basic tools to edit images through the use of layers.	A-1. Create a simple animation for a particular scenario.
K-3. Match image effects with images.	K-3. Describe the image effects.	K-3. Describe the output of various effect intensities.						

Subject Focus:	Audio and video production
Learning Outcome 3:	Use video editing software to develop an audio-visual production.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-4. Name different audio file characteristics.	*K-4. Relate between different types of audio files and their characteristics.*	*K-4. Describe the different audio file characteristics.*						
K-5. Name different video file characteristics.	*K-5. Identify the characteristics of a given video file type.*	*K-5. Describe the different video file characteristics.*	*C-3. Explain the limitations of a given audio and video file for a given scenario.*	*C-3. Justify an appropriate audio and video file for a given scenario.*	*C-3. Justify an appropriate container for a given scenario.*	A-2. Plan an audio-visual production for a given scenario.	A-2. Produce an audio-visual production for a given scenario.	A-2. Export an audio-visual production for a given scenario which includes special effects.
K-6. Name different characteristics of containers.	K-6. Identify the characteristics of a given container.	K-6. Describe the characteristics of a given container.						

Subject Focus:	Website development
Learning Outcome 4:	Plan and design a website according to specific requirements.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-7. List the basic elements of a website.	K-7. Identify the basic elements of a given website.	K-7. Outline the purpose of the basic elements of a website.	C-4. Select appropriate elements for a given scenario.	C-4. Justify the appropriate elements for a given scenario.	C-4. Argue whether the website should be static or dynamic for a given scenario.	A-3. Design the wireframe for a three-page website.	A-3. Implement the content of the website using HTML.	A-3. Publish the website formatted using CSS.
K-8. Define the terms static and dynamic websites.	K-8. Indicate the tools required to build static and dynamic websites.	K-8 Identify between static and dynamic websites.						
K-9. Define HTML and its use.	K-9. List HTML tags.	K-9. Relate attributes to the respective HTML tags.	C-5. Identify errors in given code snippets.	C-5. Correct errors in a given code snippets.	C-5. Enhance a given code snippet for a given scenario.			
K-10. Define CSS and its use.	K-10. Distinguish between different types of CSS.	K-10. Outline CSS selectors and declarations.						

Assessment Criteria

Assessment criteria provide guidance on how the candidates will be assessed in order to ensure that the learning outcomes have been achieved.

To achieve each outcome a candidate must satisfy the assessment criteria listed in the previous table. The assessment criteria which will be assessed in the controlled assessment have been highlighted.

Scheme of Assessment

Assignment Number	Assignment Type	Percentage distribution
1	Coursework	26 - 34%
2	Coursework	26 - 34%
3	Controlled	38 - 42%

Distribution of Marks

Criteria	MQF Level 1 Marks	MQF Level 2 Marks	MQF Level 3 Marks	Totals
Knowledge	1	1	2	4
Comprehension	2	2	2	6
Application	3	3	4	10

Unit 3: Networking

Unit 3	Networking
Unit Description	In this unit candidates will become acquainted with the basic terminology related to computer networks, including types of networks, topologies, 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 1. Demonstrate an understanding of computer networks and data transmission media.

LO 2. Setup a small scale local area network.

LO 3. Share files and devices on a network.

LO 4. Setup security measures.

Unit Content

Subject Focus	Computer networks
LO 1.	Demonstrate an understanding of computer networks and data transmission media.
K-1.	Network: group of devices; connected together.
	Purpose: sharing of hardware; sharing of software; sharing of data; communication.
	Places: e.g. banks, schools, hospitals, home, petrol stations, hotels, cars, aeroplanes.
K-2.	Types of networks: e.g. PAN, CAN, HAN, LAN, MAN, WAN.
	Differentiation between client-server and peer-to-peer based on: e.g. cost, network management, security.
K-3.	Data transmission signals: e.g. electrical, light, electromagnetic (radio waves, microwaves).
	Data transmission media categories: • Wired: e.g. twisted pair cable, coaxial cable, optical fibre cable; • Wireless: e.g. infrared, radio frequency (Bluetooth, Wi-Fi), microwave frequency.
	Data transmission limitations: based on distance **or** bandwidth **or** interference **or** bend radius. ***N.B.*** *For assessment purposes, **TWO** data transmission media should be considered.*
K-4.	Topologies: e.g. bus, ring, star, mesh, hybrid, tree.
C-1.	Network setup: • Type of network: PAN **or** LAN **or** MAN **or** WAN; • Data transmission: wired **or** wireless **or** a combination of both.
	Justification of data transmission medium based on: e.g. maximum speed of transmission media, interference, bandwidth (shared or dedicated or a combination of both).

Subject Focus	Protocols and networking hardware components
LO 2.	Setup a small scale local area network.
K-5.	Secure and unsecure protocols: • Secure protocols: e.g. HTTPS, SFTP, WPA2; • Unsecure protocols: e.g. HTTP, FTP, POP3.
	Networking protocols uses: e.g. web browsing, email, file transfer, wireless. ***N.B.** For assessment purposes, students are to outline the use of the protocols assessed at MQF 1.*
	Subnetwork: • Number of subnets **or** maximum host per subnet; • Subnet mask.
K-6.	Network devices: e.g. router, switch, host, modem, repeater, access point. ***N.B.** For assessment purposes, CISCO symbols should be used.*
	Specifications of network devices: e.g. number of ports, connectivity medium, power source (over Ethernet/transformer/direct electrical mains).
K-7.	Pin out standards: T568A (white/green - green - white/orange – blue - white/blue – orange - white/brown - brown); T568B (white/orange – orange - white/green – blue - white/blue – green - white/brown - brown).
	Ethernet standards: 10Base-T; 100Base-T; 1000Base-T; 10GBase-T.
	Distinguish between Ethernet standards based on: e.g. speed, maximum distance, Ethernet cable used.
C-2.	ISO/OSI layers: • Lower layers: physical; data link; network; transport; • Upper layers: session; presentation; application. ***N.B**. For assessment purposes, marks are to be awarded for lower layers and upper layers i.e. award marks only if all layers forming part of the lower/upper layers are correct.*
	Functions of ISO/OSI layers: e.g. transfer of bits of data over physical connections, transmission of data frames between two connected nodes, creation of paths over which data is transmitted across different networks, transmission of data from source to destination, coordination of communication between systems, prepares transmitted data for presentation, provision of user interface.
	TCP/IP layers: application; transport; internet; network interface.

C-3.	Network devices: e.g. router, switch, host, modem, repeater, access point. **N.B.** *For assessment purposes, the scenario presented should include at least **FOUR** network devices.*
	Network plan: proper placement of network devices/symbols on architectural design plan; inclusion and labelling of proper data transmission media.
	Justification of network devices and data transmission media based on: choice of network devices and data transmission media; placement of network devices.
A-1.	Cable crimping: cut cable to length; strip cable; untwist pairs; put cables in order according to standard; insert in connector and crimp; test cable. **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 to router; connect router to power; physically connect end devices*; test network connectivity. *__N.B.__ *For assessment purposes, end devices and router interfaces should be pre-configured.*
	Connect wireless access point to a LAN: configure IP address of access point; configure basic wireless settings of access point; connect access point to network; test network for data transfer.

Subject Focus	User accounts and sharing permissions
LO 3.	Share files and devices on a network.
K-8.	Local user accounts: e.g. administrator, standard, guest.
	Online user accounts: • 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-9.	File and folder sharing permissions: e.g. read, write, read and execute, modify, full control, list folder contents. **N.B.** *For assessment purposes, both file and folder sharing permissions should be considered.*
	Modes of sharing: centralised; distributed.
C-4.	Issues related to user accounts and sharing permissions: e.g. access to system settings, security, installation and running of applications, installation of hardware, access to files on computer, creation and modifications of user accounts, editing of file content.

A-2.	Creation of a local user account: access user accounts window; select appropriate account; set account name; create new account; create password.
	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.
	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.

Subject Focus	**Network security**
LO 4.	Setup security measures.
K-10.	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-5.	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, reliability.
A-3.	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: • Block a website: add website to block list; test that website has been blocked; • Block a program from accessing the Internet: access firewall settings; add program to block list; test that program 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 1:	Demonstrate an understanding of computer networks and data transmission media.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-1. Define a network.	*K-1. State the purpose of a network.*	*K-1. Outline the use of networks in different places.*						
K-2. Name different types of networks.	*K-2. Outline different types of networks based on geographical area.*	*K-2. Differentiate between client-server and peer-to-peer architectures.*	C-1. Identify the best network setup for a given scenario.	C-1. Justify the best network setup for a given scenario.	C-1. Justify the appropriate data transmission medium based on the bandwidth requirements.			
K-3. State different types of data transmission signals.	K-3. Categorise data transmission media as wired or wireless.	K-3. Outline a limitation for data transmission media.						
K-4. List different types of topologies.	*K-4. Sketch different types of topologies.*	*K-4. State an advantage and a disadvantage of each topology.*						

Subject Focus:	Protocols and networking hardware components
Learning Outcome 2:	Setup a small scale local area network.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-5. Identify whether the selected protocols are secure or not.	K-5. Outline the use of different networking protocols.	K-5. Identify the subnet mask to be used in a Class C IPv4 network.	*C-2. Order the ISO/OSI layers.*	*C-2. Outline the function of the ISO/OSI layers.*	*C-2. Relate the ISO/OSI layers to the TCP/IP layers.*	A-1. Crimp a CAT5e/6 cable.	A-1. Connect two wired networks via a router using cables.	A-1. Configure a wireless access point to enable communication with a local area network.
K-6. Identify network devices symbols.	*K-6. State the use of different network devices.*	*K-6. Outline specifications for a network device.*						
K-7. Match CAT5e/6 pin outs to the correct standard.	*K-7. Name different Ethernet standards.*	*K-7. Distinguish between two Ethernet standards.*	C-3. Choose the network devices necessary to setup a network for a given scenario.	C-3. Illustrate a network plan on a given architectural design for a given scenario.	C-3. Justify the network plan designed for a given architectural design for a given scenario.			

Subject Focus:	User accounts and sharing permissions
Learning Outcome 3:	Share files and devices on a network.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-8. List different local user accounts.	*K-8. Describe the purpose of different local user accounts.*	*K-8. Outline the advantages and disadvantages of online user accounts.*	*C-4. Identify issues with the selected user account and sharing permissions for a given scenario.*	*C-4. Explain issues with the selected user account and sharing permissions for a given scenario.*	*C-4. Provide suggestions to solve issues with the selected user account and sharing permissions for a given scenario.*	A-2. Create a local user account.	A-2. Share a device between computers.	A-2. Share a file/folder between computers.
K-9. List different types of file and folder sharing permissions.	K-9. Outline file and folder sharing permissions.	K-9. Differentiate between modes of sharing.						

Subject Focus:	Network security
Learning Outcome 4:	Setup security measures.

Knowledge Criteria			Comprehension Criteria			Application Criteria		
Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)	Assessment Criteria (MQF 1)	Assessment Criteria (MQF 2)	Assessment Criteria (MQF 3)
K-10. List network security threats.	*K-10. State protection measures for a networked device.*	*K-10. Outline protection measures for a wireless network.*	C-5. State different repercussions of an unsecured network for a given scenario.	C-5. Explain different repercussions of an unsecured network for a given scenario.	C-5. Justify protection measures to secure a network for a given scenario.	A-3. Protect a device using a third-party internet security suite.	A-3. Modify firewall settings to block a website and a program.	A-3. Protect a wireless router from unauthorised access.

Assessment Criteria

Assessment criteria provide guidance on how the candidates will be assessed in order to ensure that the learning outcomes have been achieved.

To achieve each outcome a candidate must satisfy the assessment criteria listed in the previous table. The assessment criteria which will be assessed in the controlled assessment have been highlighted.

Scheme of Assessment

Assignment Number	Assignment Type	Percentage distribution
1	Coursework	26 - 34%
2	Coursework	26 - 34%
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Distribution of Marks

Criteria	MQF Level 1 Marks	MQF Level 2 Marks	MQF Level 3 Marks	Totals
Knowledge	1	1	2	4
Comprehension	2	2	2	6
Application	3	3	4	10

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 (Year 9)

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 (Year 10)

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 (Year 11)

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