



TQUK Level 2 Diploma in ICT Professional Competence (RQF)

TQUK Level 3 Diploma in ICT Professional Competence (RQF)

Qualification Specification

Qualification Numbers:

601/7120/0

601/7134/0





## Introduction

### Welcome to TQUK.

TQUK is an Awarding Organisation recognised by the Office of Qualifications and Examinations Regulation (Ofqual) in England, CCEA Regulation in Northern Ireland and by Qualifications Wales.

TQUK offers qualifications which are regulated by Ofqual and, in some cases, by CCEA Regulation and/or Qualifications Wales, sit on the Regulated Qualifications Framework (RQF) and are listed on the Register of Regulated Qualifications (<http://register.ofqual.gov.uk/>).

Our qualifications are designed to support and encourage learners to develop their knowledge and skills. This development may result in progression into employment or career development in the workplace. Our qualifications also allow learners to progress onto further qualifications.

Please visit our website [www.tquk.org](http://www.tquk.org) for news of our latest developments.

### Qualification Specifications

Each qualification which TQUK offers is supported by a specification that includes all the information required by a centre to deliver a qualification. Information in the specification includes unit information, assessment and learning outcomes.

The aim of the Qualification Specification is to guide a centre through the process for delivering the qualification.

Please read it alongside the TQUK Centre Handbook.

Details of TQUK's procedures and policies can be found on our website [www.tquk.org](http://www.tquk.org)

Qualification specifications can be found also be found on our website [www.tquk.org](http://www.tquk.org)

Please check the website regularly to ensure that you are using the most up to date version.

If you have any further questions, please contact TQUK.

## Use of TQUK Logo, Name and Qualifications

TQUK is a professional organisation and use of its name and logo is restricted. TQUK's name may only be used by recognised centres to promote TQUK qualifications. Recognised centres may use the logo for promotional materials such as on corporate/business letterheads, pages of a centre's website relating to TQUK qualifications, printed brochures, leaflets or exhibition stands.

When using TQUK's logo, there must be no changes or amendments made to it, in terms of colour, size, border and shading. The logo must only be used in a way that easily identifies it as TQUK's logo. Any representation of TQUK's logo must be done so as a representation of the true logo.

It is the responsibility of the centre to monitor the use and marketing of TQUK's logos and qualifications on their own materials as well as on those of any re-sellers or third parties that they may use. TQUK should be made aware of relationships with re-sellers or third parties including any additional websites that the centre will use in addition to their own website. If this information is changed TQUK should be notified. TQUK is required to monitor centre's websites and materials to ensure that learners are not being misled.

If a centre is no longer a TQUK recognised centre it must immediately discontinue the use of TQUK's logo, name and qualifications.

## Introduction to the Qualification

The TQUK Level 2 Diploma in ICT Professional Competence

and TQUK Level 3 Diploma in ICT Professional Competence are regulated by Ofqual.

## Qualification Purpose

The Level 2 Diploma in ICT Professional Competence is aimed at learners who are working towards or recently appointed in job roles such as systems analyst, system support technician, web designer or software developer. The mandatory units and wide range of optional units have been developed to meet national occupational standards or specific vendor requirements.

The Level 3 Diploma in ICT Professional Competence is aimed at those learners who are already working as, a systems analyst, system support technician, web designer or software developer.

Both qualifications have been designed to develop and confirm knowledge and understanding of practitioners in the IT industry.

## Entry Requirements

There are no specific entry requirements however learners should have a minimum of Level two in literacy and numeracy or equivalent.

It is recommended, though not essential, that learners already have a basic knowledge and understanding of ICT and wish to use the qualifications to develop and confirm their knowledge and skills.

The qualifications are suitable for learners of 16 years of age and above.

## Progression

Successful learners can progress to other qualifications such as:

Level 3 Certificate in ICT Systems and Principles (RQF)

Level 3 Diploma in ICT Professional Competence (RQF )

Level 4 Diploma For ICT Professionals (Systems and Principles) (RQF)

Level 4 Diploma in ICT Professional Competence (PROCOM) (RQF)

to an Intermediate or Advanced Apprenticeship for IT, Software, Web & Telecoms Professionals

or to employment or to higher education

## Structure

### TQUK Level 2 Diploma in ICT Professional Competence

Learners must achieve a minimum of 48 credits: nine credits must be achieved from Group M and a minimum of 39 credits from Group O. Only one unit from each sub-group in Group OA counts towards the required credits.

Learners must achieve a minimum of 28 credits at Level 2.

#### Mandatory Units

Unit Ref	Title	Level	Credits	Guided Learning Hours
Y/500/7183	Health and Safety in ICT	1	3	15
Y/601/3317	Develop own effectiveness and professionalism	2	6	30

#### Optional Units OA

#### CC

Unit Ref	Title	Level	Credits	Guided Learning Hours
A/500/7158	Customer Care in ICT	2	9	45
F/500/7159	Customer Care in ICT	3	12	100

CG

Unit Ref	Title	Level	Credits	Guided Learning Hours
A/601/3164	Computer Games Development	2	4	28
F/601/3165	Computer Games Development	3	10	71

Unit Ref	Title	Level	Credits	Guided Learning Hours
L/601/3203	Data Modelling	3	9	75
R/601/3297	Data structures and algorithms	4	15	90

DP

Unit Ref	Title	Level	Credits	Guided Learning Hours
K/601/3502	Develop own effectiveness and professionalism	4	12	60
D/503/5549	Develop own effectiveness and professionalism	3	9	45

FD

Unit Ref	Title	Level	Credits	Guided Learning Hours
A/601/3293	Technical fault diagnosis	3	12	75
T/601/3292	Technical fault diagnosis	2	9	45

FT

Unit Ref	Title	Level	Credits	Guided Learning Hours
H/601/0663	Fibre Telecommunications Techniques	3	15	80

HW

Unit Ref	Title	Level	Credits	Guided Learning Hours
K/500/7382	Working with ICT hardware and equipment	2	9	80

RS

Unit Ref	Title	Level	Credits	Guided Learning Hours
D/500/7217	Remote Support for Products and Services	3	12	100
R/500/7215	Remote Support for Products or Services	1	6	45
Y/500/7216	Remote Support for Products and Services	2	9	60

SC

Unit Ref	Title	Level	Credits	Guided Learning Hours
D/500/7220	Security of ICT Systems	3	12	100
H/500/7221	Security of ICT Systems	4	15	90
K/500/7219	Security of ICT Systems	1	3	20

SI

Unit Ref	Title	Level	Credits	Guided Learning Hours
D/500/7329	Software installation and upgrade	2	9	80
R/500/7330	Software installation and upgrade	3	12	100

SO

Unit Ref	Title	Level	Credits	Guided Learning Hours
A/500/7340	System Operation	3	12	100
F/500/7338	ICT System Operation	2	9	45

TA

Unit Ref	Title	Level	Credits	Guided Learning Hours
F/601/3506	Technical advice and guidance	2	9	50
J/601/3507	Technical advice and guidance	3	12	75
Y/500/7345	Technical Advice and Guidance	4	15	90

Optional Units OB

Cisco

Unit Ref Num	Title	Level	Credits	Guided Learning Hours
A/601/7537	Cisco Exploration Network Fundamentals	3	10	80
H/601/7421	Cisco Exploration Routing Protocols and Concepts	3	10	80



MTA

Unit Ref	Title	Level	Credits	Guided Learning Hours
M/602/6350	MTA: Networking Fundamentals	2	10	80

Barred Units

This Unit	Is Barred Against These Units
Customer Care in ICT (A/500/7158)	F/500/7159
Computer Games Development (A/601/3164)	F/601/3165
Data Modelling (L/601/3203)	R/601/3297
Develop own effectiveness and professionalism (K/601/3502)	D/503/5549
Technical fault diagnosis (A/601/3293)	T/601/3292
Networking principles (J/601/3250)	T/601/3289
Remote Support for Products and Services (D/500/7217)	R/500/7215, Y/500/7216
Systems Architecture (M/601/3503)	T/601/3504
Security of ICT Systems (D/500/7220)	H/500/7221, K/500/7219
Software installation and upgrade (D/500/7329)	R/500/7330
System Operation (A/500/7340)	F/500/7338
Technical advice and guidance (F/601/3506)	J/601/3507, Y/500/7345
Telecommunications principles (D/601/3254)	J/601/3295

**TQUK Level 3 Diploma in ICT Professional Competence**

Learners must achieve a minimum of 72 credits: 12 credits must be achieved from Group M and a minimum of 60 credits from Group O. Only one unit from each sub-group in Group OA can be taken towards the required credits. Learners must achieve a minimum of 37 credits at Level 3.

Mandatory Units

Unit Ref	Title	Level	Credits	Guided Learning Hours
Y/500/7183	Health and Safety in ICT	1	3	15
D/503/5549	Develop own effectiveness and professionalism	3	9	45

Optional Units OA

CC

Unit Ref	Title	Level	Credits	Guided Learning Hours
A/500/7158	Customer Care in ICT	2	9	45
F/500/7159	Customer Care in ICT	3	12	100

CG

Unit Ref	Title	Level	Credits	Guided Learning Hours
A/601/3164	Computer Games Development	2	4	28
F/601/3165	Computer Games Development	3	10	71

CO

Unit Ref	Title	Level	Credits	Guided Learning Hours
L/601/3184	Creating an object oriented computer program	3	12	90

D

Unit Ref	Title	Level	Credits	Guided Learning Hours
L/601/3203	Data Modelling	3	9	75
R/601/3297	Data structures and algorithms	4	15	90

DS

Unit Ref	Title	Level	Credits	Guided Learning Hours
T/502/4556	Database Software	3	6	45

FD

Unit Ref	Title	Level	Credits	Guided Learning Hours
A/601/3293	Technical fault diagnosis	3	12	75
T/601/3292	Technical fault diagnosis	2	9	45

FO

Unit Ref	Title	Level	Credits	Guided Learning Hours
H/601/0663	Fibre Telecommunications Techniques	3	15	80

HW

Unit Ref	Title	Level	Credits	Guided Learning Hours
K/500/7382	Working with ICT hardware and equipment	2	9	80

ID

Unit Ref	Title	Level	Credits	Guided Learning Hours
R/601/3249	Investigating and defining customer requirements for ICT systems	3	12	75
R/602/1772	Investigating and Defining Customer Requirements for ICT Systems	4	15	90

RS

Unit Ref	Title	Level	Credits	Guided Learning Hours
D/500/7217	Remote Support for Products and Services	3	12	100

SA

Unit Ref	Title	Level	Credits	Guided Learning Hours
A/601/3505	Systems Architecture	4	10	80

SC

Unit Ref	Title	Level	Credits	Guided Learning Hours
D/500/7220	Security of ICT Systems	3	12	100
H/500/7221	Security of ICT Systems	4	15	90
K/500/7219	Security of ICT Systems	1	3	20

SI

Unit Ref	Title	Level	Credits	Guided Learning Hours
D/500/7329	Software installation and upgrade	2	9	80
R/500/7330	Software installation and upgrade	3	12	100

SO

Unit Ref	Title	Level	Credits	Guided Learning Hours
A/500/7340	System Operation	3	12	100
F/500/7338	ICT System Operation	2	9	45

TA

Unit Ref	Title	Level	Credits	Guided Learning Hours
F/601/3506	Technical advice and guidance	2	9	50
J/601/3507	Technical advice and guidance	3	12	75

Unit Ref	Title	Level	Credits	Guided Learning Hours
Y/500/7345	Technical Advice and Guidance	4	15	90

TS

Unit Ref	Title	Level	Credits	Guided Learning Hours
A/500/7354	Testing ICT Systems	2	9	80
F/500/7355	Testing ICT Systems	3	12	100

Optional Units OB

MS

Unit Ref	Title	Level	Credits	Guided Learning Hours
M/502/3650	Configuring Windows Server 2008 Active Directory	3	13	90
J/502/3640	Configuring Windows Server 2008 Network Infrastructure	3	11	90
J/502/3637	Windows Server 2008, Server Administrator	3	11	90
A/602/6349	MTA: Security Fundamentals	2	10	80
A/503/5249	MTA: Microsoft .NET Fundamentals	2	10	80
A/602/6352	MTA: Database Administration Fundamentals	2	10	80

Unit Ref	Title	Level	Credits	Guided Learning Hours
F/602/6353	MTA: Web Development Fundamentals	2	10	80
M/602/6347	MTA: Software Development Fundamentals	2	10	80
T/602/6348	MTA: Windows Development Fundamentals	2	10	80

#### Barred Units

This Unit	Is Barred Against These Units
Customer Care in ICT (A/500/7158)	F/500/7159
Computer Games Development (A/601/3164)	F/601/3165
Data Modelling (L/601/3203)	R/601/3297
Technical fault diagnosis (A/601/3293)	T/601/3292
Investigating and defining customer requirements for ICT systems (R/601/3249)	R/602/1772
Networking principles (T/601/3289)	J/601/3250
Systems Architecture (A/601/3505)	M/601/3503, T/601/3504
Security of ICT Systems (D/500/7220)	H/500/7221, K/500/7219
Software installation and upgrade (D/500/7329)	R/500/7330
System Operation (A/500/7340)	F/500/7338
Technical advice and guidance (F/601/3506)	J/601/3507, Y/500/7345
Telecommunications principles (D/601/3254)	J/601/3295

## Total Qualification Time

This is an estimate of the total length of time it is expected that a learner will typically take to achieve and demonstrate the level of attainment necessary for the award of the qualification i.e. to achieve all learning outcomes.

Total Qualification Time is comprised of GLH and an estimate of the number of hours a learner is likely to spend in preparation, study or any other learning including assessment, which takes place as directed by, but not under the supervision of a lecturer, supervisor or tutor. The credit value, where given, for a qualification is determined by TQT, as one credit corresponds to 10 hours of learning.

## Total Qualification Time

TQUK Level 2 Diploma in ICT Professional Competence (RQF) – 480 hours

TQUK Level 3 Diploma in ICT Professional Competence (RQF)- 720 hours

## Guided Learning Hours

These hours are made up of all real time contact time, guidance or supervision of a learner by a lecturer, supervisor, tutor, trainer or other appropriate provider of education or training.

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## Assessment

The qualification is assessed by internally set and marked assessments subject to external quality assurance.

Where indicated in the unit specifications, assessment must meet the requirements of the identified assessment strategy/principles.

Materials for internal assessment must be submitted to TQUK for approval prior to use and must be mapped to the relevant unit, learning outcome and assessment criteria.

All learning outcomes must be met to achieve a pass - there is no grading.

## Centre Recognition

To offer any TQUK qualification each centre must be recognised by TQUK and meet qualification approval criteria. Qualification approval must be confirmed prior to any assessment of learners taking place. It is essential that centres provide learners with access to appropriate support in the form of specialist resources.

The TQUK Centre Recognition process requires a centre to have in place a number of policies and procedures to protect the learners undertaking a TQUK qualification and the integrity of TQUK's qualifications. The policies and procedures will also support an approved Centre's quality systems.



Recognised centres must seek approval for each qualification they wish to offer.

The approval process requires centres to demonstrate that they have the resources, including staff, to deliver and assess the qualification.

## Support from TQUK

Recognised centres will be able to access support from TQUK whenever necessary. External Quality Assurance activities will be undertaken on a regular basis. TQUK also offers recognised centres the service of a Client Relationship Officer whose role is to support centres with any administration queries or qualification support.

## Course Delivery

### Pre-Course Information

All learners should be given appropriate pre-course information regarding any TQUK qualifications. The information should explain about the qualification, the fee, the form of the assessment and any entry requirements or resources needed to undertake the qualification.

### Initial Assessment

Centres should ensure that any learner registered on a TQUK qualification undertakes some form of initial assessment. The initial assessment should be used to inform a teacher/trainer on the level of the learner's current knowledge and/or skills.

Initial assessment can be undertaken by a teacher/trainer in any form suitable for the qualification to be undertaken by the learner/s. It is the centre's responsibility to make available forms of initial assessment that are valid, applicable and relevant to TQUK qualifications.

### Learner Registration

Once approved to offer a qualification the centre should register learners before any assessment can take place. Recognised centres must follow TQUK's procedures for registering learners. For short courses, TQUK offer the option of registering a course and booking a number of places. Learners are then added once the course has taken place, thus acknowledging situations where substitutions are made at short notice to meet business needs.

### Trainer/Assessor Requirements

Tutors/trainers who deliver a TQUK qualification must possess a teaching qualification appropriate for the level of qualification they are delivering. This can include the below:

- Further and Adult Education Teachers Certificate
- Cert Ed/PGCE/B Ed/M Ed
- PTLLS/CTLLS/DTLLS
- Level 3 Award/4 Certificate/5 Diploma in Education and Training

Assessors who assess a TQUK qualification must possess an assessing qualification appropriate for the level of qualification they are delivering. This can include:

- Level 3 Award in Assessing Competence in the Work Environment
- Level 3 Award in Assessing Vocationally Related Achievement
- Level 3 Award in Understanding the Principles and Practices of Assessment
- Level 3 Certificate in Assessing Vocational Achievement
- A1 or D32/D33

Specific requirements for assessors may be indicated in the assessment strategy/principles identified in individual unit specifications.

### Internal Quality Assurer Requirements

Centre staff who undertake the role of an Internal Quality Assurer (IQA) for TQUK qualifications must possess or be working towards a relevant qualification. This could include:

- Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practice
- Level 4 Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practice
- V1 Conduct internal quality assurance of the assessment process
- D34 Internally verify the assessment process

It is best practice that those who quality assure qualifications also hold one of the assessing qualifications outlined above. IQAs must follow the principles set out in Learning and Development NOS 11 - Internally monitor and maintain the quality of assessment.

All staff members involved with the qualification (training, assessing or IQA) will also need to be '*occupationally competent in the subject area being delivered*'. This could be evidenced by a combination of the below:

- A higher level qualification in the same subject area as the qualification approval request.
- Experience of the delivery/assessment/IQA of the qualification/s requested.
- Work experience in the subject area of the qualifications.

Staff members will also be expected to have a working knowledge of the requirements of the qualification, and a thorough knowledge and understanding of the role of tutors/assessors and internal quality assurance. They are also expected to undertake continuous professional development (CPD) to ensure they are up to date with work practices and developments in the qualifications they are involved with.

## Useful Websites

Health and Safety Executive [www.hse.gov.uk](http://www.hse.gov.uk)

Office of Qualifications and Examinations Regulation [www.ofqual.gov.uk](http://www.ofqual.gov.uk)

Register of Regulated Qualifications <http://register.ofqual.gov.uk>

Health and Safety Executive NI <https://www.hseni.gov.uk/>

For further details regarding approval and funding eligibility please refer to the following websites:

Skills Funding Agency <http://skillsfundingagency.bis.gov.uk/> for public funding information for 19+ learners in England

Learning Aim Reference Service (LARS) <https://www.gov.uk/government/publications/individualised-learner-record-ilr-sources-of-data>

DAQW – Database of Approved Qualifications [www.daqw.org.uk](http://www.daqw.org.uk) for public funding in Wales

Department for the Economy <https://www.economy-ni.gov.uk/> or Department of Education [www.deni.gov.uk](http://www.deni.gov.uk) for public funding in Northern Ireland.

## Units of assessment

### Mandatory Unit 1

Title:		Health and Safety in ICT Y/500/7183	
Level:		1	
Credit value:		3	
Guided learning hours:		15	
Learning outcomes  The learner will:		Assessment criteria  The learner can:	
1.	Comply with relevant Health & Safety procedures	1.1	Identify relevant organisational Health & Safety procedures
		1.2	Identify available sources of Health & Safety information
		1.3	Demonstrate how relevant Health & Safety procedures have been followed
Assessment requirements: NA			

Mandatory Unit 2

<b>Title:</b>		Develop own effectiveness and professionalism D/5035549	
<b>Level:</b>		3	
<b>Credit value:</b>		9	
<b>Guided learning hours:</b>		45	
<b>Learning outcomes</b>		<b>Assessment criteria</b>	
The learner will:		The learner can:	
1.	Develop own personal and professional skills	1.1	obtain and review feedback from others on performance
		1.2	agree personal goals and participate in development activities to meet them
2.	Work as a member of a team to achieve defined goals and implement agreed plans	2.1	effectively manage own time
		2.2	recognise and respect diversity, individual differences and perspectives
		2.3	accept and provide feedback in a constructive and considerate manner
		2.4	understand the responsibilities of colleagues
		2.5	identify obstacles to effective teamwork
3.	Understand what is meant by professional practice	3.1	Identify the implications, and applicability for IT professionals of: <ul style="list-style-type: none"> <li>• General Data Protection Regulation</li> <li>• Computer Misuse Act</li> </ul>
		3.2	List the professional bodies for IT
4.	Know the legislative environment relating to IT activities	4.1	Identify the impact on an IT organisation of legislation covering: <ul style="list-style-type: none"> <li>• Processing of financial transactions</li> <li>• Health and Safety</li> <li>• Privacy, Confidentiality and Security</li> <li>• Copyright and Intellectual Property Rights</li> </ul>
5.	Improve personal effectiveness	5.1	List the aims and objectives of the organisation

		5.2	State the organisation's brand or image
		5.3	Identify the organisation's structure, roles and responsibilities
		5.4	Identify potential improvements to working practices
Assessment requirements: NA			

Title:		Customer Care in ICT A/500/7158	
Level:		2	
Credit value:		9	
Guided learning hours:		45	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1.	Know how to provide customer care by establishing customer relationships	1.1	Describe the uses of interpersonal communication techniques such as: <ul style="list-style-type: none"> <li>• verbal (e.g. intonation, tone and feedback (sometimes referred to as verbal attends) and non-verbal techniques (e.g. smiling while talking on the phone, body language)</li> <li>• attentive listening (i.e. difference between hearing and listening)</li> <li>• positive and negative language</li> <li>• active listening (e.g. summarising, paraphrasing, body language)</li> <li>• listening barriers (e.g. background noise, distractions, lack of concentration)</li> <li>• types of question (e.g. open, closed and probing)</li> </ul>
		1.2	Describe the relevant parts of the organisational requirements for customer care including: <ul style="list-style-type: none"> <li>• customer service procedures (e.g. how to log customer information, how to initiate service calls, how to complete a sale)</li> <li>• authorisation procedures (e.g. how to confirm caller identity, how to validate requests)</li> <li>• escalation, resolution and complaint handling</li> <li>• quality assurance procedures</li> <li>• compliance with relevant legislation and regulations (e.g. data protection, financial services)</li> <li>• maintenance and communication of organisational brand or image</li> <li>• organisational aims and objectives</li> </ul>

		1.3	Describe what the implications of customer satisfaction are: <ul style="list-style-type: none"> <li>• customer retention</li> <li>• working relationships</li> </ul>
		1.4	Describe the relevant methods of measuring customer satisfaction levels such as <ul style="list-style-type: none"> <li>• predefined formal feedback</li> <li>• unsolicited feedback</li> <li>• anecdotal feedback</li> </ul>
2.	Provide customer care by establishing customer relationships	2.1	Comply with organisational requirements
		2.2	Communicate interpersonally on familiar subjects such as: <ul style="list-style-type: none"> <li>• following organisational guidelines and procedures</li> <li>• articulating and expressing ideas clearly and concisely</li> <li>• listening actively (e.g. by taking notes)</li> <li>• clarifying and confirming understanding (e.g. by paraphrasing or repetition).</li> <li>• responding to questions with accurate information</li> <li>• ensuring content is appropriate to the needs of the audience</li> <li>• identifying and avoiding listening barriers</li> <li>• maintaining focus on the purpose of the communication</li> </ul>
		2.3	Providing customer interaction such as: <ul style="list-style-type: none"> <li>• focuses on addressing customer needs</li> <li>• interacts in a sensitive and helpful manner with the customer</li> <li>• responds to customer requests on time, accurately, pleasantly and professionally</li> <li>• builds a trusting relationship with the customer</li> <li>• keeps self and customer focused</li> <li>• maintains consistent communication style</li> </ul>
		2.4	Provide service delivery such as: <ul style="list-style-type: none"> <li>• recognising own limitations</li> <li>• escalating customer issues following organisational requirements</li> </ul>



			<ul style="list-style-type: none"> <li>• meets own commitments to customers</li> <li>• follows up customer problems and issues</li> </ul>
		2.5	Handle complaints from customers such as <ul style="list-style-type: none"> <li>• using probing questions;</li> <li>• displaying patience and understanding with demanding or emotional customers</li> </ul>
		2.6	Gather specified customer satisfaction information
Assessment requirements: NA			

Title:		Customer Care in ICT F/500/7159	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand how to provide ICT customer care by developing customer relationships	1.1	Describe the uses of interpersonal communication techniques
		1.2	Explain the different approaches and methods used for supporting technical and non-technical customers
		1.3	Describe the organisational requirements for ICT customer care
		1.4	Explain the effect of ICT customer care on the rest of the organisation
2	Be able to provide ICT customer care by developing customer relationships	2.1	Monitor compliance with organisational requirements for ICT customer support
		2.2	Follow organisational guidelines and procedures to communicate with customers
		2.3	Interact effectively with customers to achieve agreed outcome
3	Be able to contribute to improving the delivery of service	3.1	Describe the implications of customer satisfaction for the business
		3.2	Describe the methods of measuring customer satisfaction levels
		3.3	Suggest improvements to ICT service delivery
		3.4	Handle complaints from customers following organisational guidelines
		3.5	Gather specified customer satisfaction information
		3.6	Analyse specified customer satisfaction information
		3.7	Report on specified customer satisfaction information

Assessment requirements: NA			

Title:		Computer Games Development A/601/3164	
Level:		2	
Credit value:		4	
Guided learning hours:		28	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know computer game components and the computer games industry	1.1	Identify the hardware and software components of a video game system
		1.2	Identify the activities required to develop modern computer games
		1.3	Describe the features of an existing computer game
2	Know how to develop a computer game specification	2.1	Contribute to the production of a pre-production proposal document for a computer game project
		2.2	Identify the components required to develop a computer game
		2.3	Contribute to the productions of an implementation plan for a computer game development
3	Implement a component of a computer game	3.1	Design a component of a computer game
		3.2	Develop a component of a computer game
Assessment requirements: NA			

Title:		Computer Games Development F/601/3165	
Level:		3	
Credit value:		10	
Guided learning hours:		71	
<b>Learning outcomes</b>		<b>Assessment criteria</b>	
The learner will:		The learner can:	
1	Understand computer game architecture and components	1.1	Describe the hardware and software components of a video game system
2	Understand the computer games industry	2.1	Describe the stages of evolution of computer game industry
		2.2	Describe the roles and activities required to develop modern computer games
		2.3	Explain computer game development processes and terminology
		2.4	Explain computer game programming methods and techniques
3	Be able to evaluate existing computer games	3.1	Produce a structured evaluation of an existing computer game
4	Develop a computer game specification	4.1	Produce a pre-production proposal document for a computer game project
		4.2	Identify the components required to develop a computer game
		4.3	Produce an implementation plan for a computer game development
5	Implement elements of a computer game	5.1	Design components of a computer game
		5.2	Develop components of a computer game
		5.3	Test components of a computer game
Assessment requirements: NA			

Title:		Data Modelling L/601/3203	
Level:		3	
Credit value:		9	
Guided learning hours:		75	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the concepts of logical data modelling	1.1	Describe entities and the types of attributes which can be assigned to them
		1.2	Describe the type of relationships which can exist between entities
		1.3	Explain the objectives of data normalisation and describe the Third Normal Form (3NF)
		1.4	Explain the purpose of keys
		1.5	Describe an application where un-normalized or de-normalised data may be used
		1.6	Describe the types of standard notation which can be used to represent data sets as logical data models
2	Use data modelling techniques to create logical data models	2.1	Identify and name entities, assigning the correct attributes
		2.2	Identify and represent entity relationships, assigning the correct type
		2.3	Normalise a data set to Third Normal Form (3NF)
3	Use data modelling techniques to refine logical data models	3.1	Identify entities which will be accessed for enquiry and/or update
		3.2	Identify access sequences and triggers
		3.3	Create access rules/methods

		3.4	Use a standard notation to describe the logical data model of a normalised data set
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Assessment requirements: NA			
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Title:		Data structures and algorithms R/601/3297	
Level:		4	
Credit value:		15	
Guided learning hours:		90	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the structure and uses of various data structures and their associated algorithms	1.1	Define the terminology used to describe the elements of data structures including arrays, linked lists, stacks, queues, trees, graphs and sets
		1.2	Explain how one-dimensional and multi-dimensional arrays are structured and processed
		1.3	Explain how linked lists (including singly, doubly and circular linked lists) are structured and processed
		1.4	Explain how stacks and queues are structured and processed
		1.5	Explain how trees and graphs are structured and processed
		1.6	Explain how sets are structured and processed
2	Understand the operation of established algorithms	2.1	Explain the operation and performance of sorting and search algorithms
		2.2	Explain the operation of recursive algorithms and identify situations when recursion is used
3	Select appropriate data structures and associated algorithms for specified problems	3.1	Given a specified problem, choose a data structure and associated algorithm and justify the selection
4	Describe the data structures and associated algorithms in a non-executable program specification language	4.1	Specify the structure and associated algorithms of arrays, linked lists, stacks, queues, trees, graphs and sets in well-established specification languages



		4.2	Specify the behaviour of sorting, searching and recursive algorithms using well-established specification languages
		4.3	Demonstrate the operation of data-structures and algorithms by hand execution of the associated algorithms with specified test data
5	Implement data structures and algorithms in an executable programming language	5.1	Implement arrays, linked lists, stacks, queues, trees, graphs and sets in the context of well-defined problems in an executable programming language
		5.2	Implement sorting, searching and recursive algorithms in the context of well-defined problems in an executable programming language
		5.3	Demonstrate the correct operation of data structure algorithms implemented in an executable programming language by devising and executing testing strategies
6	Understand how strings are structured and processed	6.1	Explain the structure of strings
		6.2	Identify common string operations
		6.3	Demonstrate the outcome of string operations on specified strings
Assessment requirements: NA			

Title:		Technical fault diagnosis A/601/3293	
Level:		3	
Credit value:		12	
Guided learning hours:		75	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the processes, methods and information that are used in the diagnostic process	1.1	Describe the steps of the diagnostic process including: <ul style="list-style-type: none"> <li>• fault validation</li> <li>• information gathering</li> <li>• information analysis</li> <li>• solution identification</li> </ul>
		1.2	Describe the types of diagnostic information that are commonly needed: <ul style="list-style-type: none"> <li>• problem description</li> <li>• problem history</li> <li>• problem location</li> <li>• technical information on a specified range of products including the system under investigation</li> </ul>
		1.3	Explain the following diagnostic methods and give examples of their appropriate use: <ul style="list-style-type: none"> <li>• substitution</li> <li>• replication</li> <li>• performance and functional testing</li> <li>• environment change</li> </ul>
		1.4	Explain how the following considerations can affect fault diagnosis <ul style="list-style-type: none"> <li>• minimisation of service disruption during diagnostics</li> <li>• individual responsibility and authority</li> <li>• escalation procedure</li> <li>• service level agreements</li> </ul>

		1.5	Interpret detailed technical information on a range of products
2	Be able to diagnose faults with a wide range of causes	2.1	Select and correctly use appropriate diagnostic tools to carry out non-routine diagnosis
		2.2	Select and use given sources of diagnostic and other technical information
		2.3	Identify and interpret relevant information to support the diagnosis
		2.4	Analyse information to diagnose faults with a wide range of causes, using at least three of the following approaches: <ul style="list-style-type: none"> <li>• trend analysis</li> <li>• what-if scenarios</li> <li>• gap analysis</li> <li>• identification of cause and effect</li> <li>• flow charts</li> </ul>
		2.5	Describe possible ways to prevent reoccurrence of diagnosed faults
3	Select remedies for non-routine faults	3.1	Select a suitable remedy to rectify identified faults taking into account the following: <ul style="list-style-type: none"> <li>• business or service impact</li> <li>• resource and skill availability</li> <li>• ease of implementation</li> <li>• cost effectiveness</li> <li>• performance</li> <li>• compatibility</li> <li>• time</li> <li>• permanence</li> </ul>
		3.2	Identify possible ways to prevent reoccurrence of diagnosed faults
4	Maintain diagnosis and remedy records	4.1	Accurately document the diagnosis activities undertaken including: <ul style="list-style-type: none"> <li>• fault description</li> <li>• supporting information</li> <li>• diagnostic tools etc used</li> <li>• cause of fault</li> <li>• remedy selected</li> </ul>
Assessment requirements: NA			

Title:		Technical fault diagnosis A/601/3292	
Level:		2	
Credit value:		9	
Guided learning hours:		45	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know the process, methods and information that are used in the diagnostic process	1.1	Identify the steps of the diagnostic process including: <ul style="list-style-type: none"> <li>• fault validation</li> <li>• information gathering</li> <li>• information analysis</li> <li>• solution identification</li> </ul>
		1.2	Describe the types of diagnostic information that are commonly needed and their purpose
		1.3	Describe common diagnostic methods to include: <ul style="list-style-type: none"> <li>• substitution</li> <li>• replication</li> <li>• performance and functional testing</li> <li>• environment change</li> </ul>
		1.4	List typical considerations affecting fault diagnosis, e.g. <ul style="list-style-type: none"> <li>• minimisation of service disruption during diagnostics</li> <li>• individual responsibility and authority</li> <li>• escalation procedure</li> <li>• level of service</li> </ul>
2	Apply processes to diagnose faults with a known range of causes and assist in the diagnosis of other faults	2.1	Correctly use appropriate diagnostic tools e.g. <ul style="list-style-type: none"> <li>• electrical/electronic test instruments</li> <li>• on-board self-test programs</li> <li>• loopback devices</li> <li>• on-line/remote monitoring</li> <li>• diagnostic software</li> </ul>

		2.2	Effectively use given sources of information to support diagnosis
		2.3	Analyse information to identify the cause of faults, using two of the following approaches: <ul style="list-style-type: none"> <li>• gap analysis</li> <li>• identification of cause and effect</li> <li>• flow charts</li> </ul>
3	Select fault remedies from given alternatives	3.1	Select, from given alternatives, a suitable remedy to rectify identified faults taking into account the following: <ul style="list-style-type: none"> <li>• business or service impact</li> <li>• resource and skill availability</li> <li>• ease of implementation</li> </ul>
		3.2	Identify possible ways to prevent reoccurrence of diagnosed faults
4	Maintain diagnosis and remedy records	4.1	Accurately document the diagnosis activities undertaken including: <ul style="list-style-type: none"> <li>• fault description</li> <li>• supporting information</li> <li>• diagnostic tools etc used</li> <li>• cause of fault</li> <li>• remedy selected</li> </ul>
Assessment requirements: NA			

Title:		Fibre Telecommunications Techniques H/601/0663	
Level:		3	
Credit value:		15	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the properties, structures and components included in typical fibre telecommunications networks	1.1	Identify different types of optical fibre
		1.2	Identify the physical components required to build a fibre infrastructure
		1.3	Explain the different structures used in fibre networks, and when different structures should be used
2	Understand safe working practices when working with optical fibre networks	2.1	Identify key safety considerations when working with optical fibre
		2.2	Identify any existing risk assessments for working with fibre networks
		2.3	Explain how to dispose of redundant or damaged optical fibres
3	Know the quality standards and documentation requirements when working on the optical fibre network	3.1	Explain the quality standards that apply for all installation and maintenance work on the optical fibre network
		3.2	Explain what technical documentation needs to be completed before and after undertaking work on the fibre network
4	Prepare and install optical fibre components in exchanges and customer premises	4.1	Prepare optical fibre components for use
		4.2	Provide fibres from a customer premises point of entry to the equipment fibre pigtailed for both two-fibre and single-fibre working
		4.3	Test components before commissioning the components.
5	Build an external fibre network	5.1	Prepare cables for splicing

		5.2	Manage cables on single circuit trays
		5.3	Splice fibres cables on single circuit trays
6	How to construct and re-enter a fibre closure	6.1	Explain where various fibre options should be used
		6.2	Construct a fibre closure
		6.3	Re-enter an existing closure
Assessment requirements: NA			

Title:		Working with ICT hardware and equipment K/500/7382	
Level:		2	
Credit value:		9	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know how to plan and carry out a range of ICT hardware and equipment work activities under direction	1.1	Describe the working process such as: <ul style="list-style-type: none"> <li>• tools and techniques to be used;</li> <li>• procedures to be followed;</li> <li>• procedures for information recording.</li> <li>• customer requirements;</li> <li>• product specifications</li> <li>• planning own work</li> </ul>
		1.2	Explain how regulatory requirements affect work activities
2	Plan and carry out a range of ICT hardware and equipment work activities under direction	2.1	Use appropriate tools and techniques safely
		2.2	Follow relevant working procedures such as: <ul style="list-style-type: none"> <li>• Health &amp; Safety;</li> <li>• quality;</li> <li>• use of tools;</li> <li>• configuration;</li> <li>• testing; logistics;</li> <li>• waste disposal;</li> <li>• problem escalation;</li> <li>• information recording;</li> <li>• obtaining work permissions</li> <li>• security and confidentiality</li> <li>• customer acceptance;</li> <li>• commissioning</li> <li>• product registration</li> </ul>
		2.3	Obtain specified resources
		2.4	Record relevant information



		2.5	Communicate the progress and outcome of work to the appropriate people
3	Minimise risks related to ICT hardware and equipment work activities	3.1	Assess and minimise risks related to work activities such as: <ul style="list-style-type: none"> <li>• loss or corruption of data</li> <li>• loss of service</li> <li>• damage to equipment</li> </ul>
Assessment requirements: NA			

Title:		Remote Support for Products and Services D/500/7217	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the organisational requirements for customer care and the supported products and services	1.1	Describe the products and services to be supported including: <ul style="list-style-type: none"> <li>• benefits of the products and services</li> <li>• frequently used product or service options</li> <li>• advanced features, benefits and options of products and services</li> <li>• how to identify alternative products or services to meet customer's needs</li> <li>• how the products or services interact with others commonly available</li> <li>• where to obtain information on infrequently used product or service features or options</li> <li>• the impact of introducing new products and services</li> </ul>
		1.2	Describe the organisational requirements for customer care including: <ul style="list-style-type: none"> <li>• customer service procedures (e.g. how to log customer information, how to initiate service calls, how to complete a sale)</li> <li>• authorisation procedures (e.g. how to confirm caller identity, how to validate requests)</li> <li>• escalation, resolution and complaint handling</li> <li>• quality assurance procedures</li> <li>• compliance with relevant legislation and regulations (e.g. data protection, financial services)</li> <li>• maintenance and communication of organisational brand or image</li> <li>• organisational aims and objectives</li> </ul>
2	Support products or services	2.1	Comply with organisational requirements

		<table border="1"> <tr> <td data-bbox="668 143 730 259">2.2</td> <td data-bbox="730 143 1461 259">Confirm customer identity, validate requests and inform customers when authorisation criteria are not met</td> </tr> <tr> <td data-bbox="668 259 730 1115">2.3</td> <td data-bbox="730 259 1461 1115"> <p>Communicate information on specified products or services</p> <ul style="list-style-type: none"> <li>• identifying customers needs</li> <li>• accurately collecting and logging relevant information from the customer</li> <li>• providing product and service features to customers</li> <li>• ensuring customer understanding of the information provided</li> <li>• categorising requests and directing customers appropriately</li> <li>• managing customer expectations (e.g. by confirming outcomes, timescales or costs)</li> <li>• discussing advantages and disadvantages of complex products and services</li> <li>• discussing how the service product best fits the customer's needs</li> <li>• keeping customer informed on progress</li> <li>• asking effective and appropriate probing questions</li> </ul> </td> </tr> <tr> <td data-bbox="668 1115 730 1196">2.4</td> <td data-bbox="730 1115 1461 1196">Make recommendations based on customer needs</td> </tr> <tr> <td data-bbox="668 1196 730 1704">2.5</td> <td data-bbox="730 1196 1461 1704"> <p>Resolve and escalate requests and handle basic complaints</p> <ul style="list-style-type: none"> <li>• using probing questions</li> <li>• displaying patience and understanding with demanding or emotional customers</li> <li>• diffusing volatile situations using appropriate communication techniques</li> <li>• delivering difficult messages to customers and explaining the reasons behind the decision</li> <li>• assessing priority of complaints</li> <li>• resolving routine complaints</li> </ul> </td> </tr> </table>	2.2	Confirm customer identity, validate requests and inform customers when authorisation criteria are not met	2.3	<p>Communicate information on specified products or services</p> <ul style="list-style-type: none"> <li>• identifying customers needs</li> <li>• accurately collecting and logging relevant information from the customer</li> <li>• providing product and service features to customers</li> <li>• ensuring customer understanding of the information provided</li> <li>• categorising requests and directing customers appropriately</li> <li>• managing customer expectations (e.g. by confirming outcomes, timescales or costs)</li> <li>• discussing advantages and disadvantages of complex products and services</li> <li>• discussing how the service product best fits the customer's needs</li> <li>• keeping customer informed on progress</li> <li>• asking effective and appropriate probing questions</li> </ul>	2.4	Make recommendations based on customer needs	2.5	<p>Resolve and escalate requests and handle basic complaints</p> <ul style="list-style-type: none"> <li>• using probing questions</li> <li>• displaying patience and understanding with demanding or emotional customers</li> <li>• diffusing volatile situations using appropriate communication techniques</li> <li>• delivering difficult messages to customers and explaining the reasons behind the decision</li> <li>• assessing priority of complaints</li> <li>• resolving routine complaints</li> </ul>
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Assessment requirements: NA										

Title:		Security of ICT Systems D/500/7220	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know the common types of security threat to an organisation, its IT system and its data, with relevant methods and procedures for protecting it	1.1	Describe the common types of security breach that can affect the organisation, such as: <ul style="list-style-type: none"> <li>• unauthorised use of a system without damage to data</li> <li>• unauthorised removal or copying of data or code from a system</li> <li>• damage to or destruction of physical system assets and environment</li> <li>• damage to or destruction of data or code inside or outside the system</li> <li>• preventing normal use of a system (eg denial of service attack)</li> </ul>
		1.2	Describe specified data protection methods: <ul style="list-style-type: none"> <li>• system data security facilities</li> <li>• surveillance and monitoring methods</li> <li>• effects of system configuration on data protection</li> </ul>
		1.3	Describe specified methods of providing physical security for ICT systems <ul style="list-style-type: none"> <li>• access control devices (e.g. locks, biometric controls, CCTV) and their configuration</li> <li>• limiting visibility of data (e.g. by positioning of monitors, using encryption)</li> <li>• shielding (e.g. cable screening, Faraday cages)</li> <li>• types and appropriate uses of access records and authorisations</li> <li>• how to allocate access authority</li> </ul>
		1.4	Describe relevant organisational security procedures

2	Apply security measures	2.1	<p>Configure and apply specified security tools to identify and prevent breaches of security, such as:</p> <ul style="list-style-type: none"> <li>• internal system tools (e.g. passwords and permissions, malware scanning, firewall, VPN, authentication and encryption facilities)</li> <li>• external tools (e.g. access control devices)</li> </ul>
3	Monitor security procedures	3.1	<p>Assist in ensuring compliance with organisational security procedures, including:</p> <p>participating in security audits  gathering and recording information on security  initiating suitable actions to deal with identified breaches of security</p>
Assessment requirements: NA			

Title:		Security of ICT Systems H/500/7221	
Level:		4	
Credit value:		15	
Guided learning hours:		90	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the security threats to an IT system, their operational impact and the methods available to combat them	1.1	Describe the data protection methods that are relevant to the organisation
		1.2	Describe physical security methods in use
		1.3	Describe organisational security procedures
		1.4	Describe types of possible security breaches and their operational impacts
2	Maintain and improve ICT security procedures	2.1	Review and update security procedures
		2.2	Ensure compliance with security procedures by scheduling security audits
		2.3	Initiate suitable actions to deal with identified breaches of security
		2.4	Inform colleagues of their security responsibilities and confirm their understanding at suitable intervals
3	Implement security procedures	3.1	Schedule and carry out security risk assessments
		3.2	Select appropriate security tools for the organisation or department to use
Assessment requirements: NA			

Title:		Security of ICT Systems K/500/7219	
Level:		1	
Credit value:		3	
Guided learning hours:		20	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know the particular threats to an IT system and its data with specified methods and procedures for protecting it	1.1	Describe specified data protection methods, such as: <ul style="list-style-type: none"> <li>malware detection software (anti-virus, anti spyware etc)</li> <li>Internet security suites (firewall, malware detection, anti-phishing and spam filters)</li> <li>use and protection of passwords or access codes</li> <li>backup and storage</li> </ul>
		1.2	Describe specified methods of providing physical security for ICT systems: <ul style="list-style-type: none"> <li>access control devices (e.g locks, biometric controls, CCTV);</li> <li>limiting visibility of data (e.g. by positioning of monitors, using encryption);</li> <li>shielding (e.g. cable screening, Faraday cages)</li> </ul>
		1.3	Describe relevant organisational security procedures
		1.4	Describe the type of security breaches that can occur in IT systems, such as <ul style="list-style-type: none"> <li>unauthorised use of a system without damage to data;</li> <li>unauthorised removal or copying of data or code from a system;</li> <li>damage to or destruction of physical system assets and environment</li> <li>damage to or destruction of data or code inside or outside the system</li> <li>preventing normal use of a system (eg denial of service attack)</li> </ul>

2	Comply with relevant security requirements to protect an IT system and its data	2.1	Use specified security tools to identify and prevent breaches of security: <ul style="list-style-type: none"> <li>• internal system tools (e.g. passwords, anti-virus software, firewalls and encryption facilities)</li> <li>• external tools (e.g. access control devices)</li> </ul>
		2.2	Comply with organisational security procedures
Assessment requirements: NA			



Title:		Software installation and upgrade D/500/7329	
Level:		2	
Credit value:		9	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand relevant parts of the installation/upgrade process	1.1	Describe the relevant parts of the software installation and upgrade process including: <ul style="list-style-type: none"> <li>• procedures to be followed</li> <li>• procedures for information recording</li> <li>• software storage locations to be used</li> <li>• specifications of the software</li> </ul>
		1.2	Describe relevant software loading facilities
2	Install/upgrade software	2.1	Follow relevant installation/upgrade procedures
		2.2	Use appropriate software loading facilities
		2.3	Record relevant information
		2.4	Communicate the progress and outcome of the installation/upgrade to the appropriate people
Assessment requirements: NA			

Title:		Software installation and upgrade R/500/7330	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the installation/upgrade process	1.1	Describe the software installation and upgrade process including: <ul style="list-style-type: none"> <li>• procedures to be followed</li> <li>• procedures for information recording</li> <li>• software storage locations to be used</li> <li>• specifications of the software</li> </ul>
		1.2	Describe the capabilities of software loading facilities
2	Carry out or control a wide range of installations or upgrades	2.1	Provide guidance on installation/upgrade procedures to immediate colleagues
		2.2	Obtain and allocate required materials
		2.3	Select the installation/upgrade procedures to be followed
		2.4	Select software loading facilities to be used
Assessment requirements: NA			

Title:		System Operation A/500/7340	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know how to operate the system	1.1	Explain the operating procedures that are applicable to the system, such as: <ul style="list-style-type: none"> <li>• required service levels (e.g. availability, quality)</li> <li>• routine maintenance</li> <li>• monitoring</li> <li>• data integrity (e.g. backups, anti-virus)</li> <li>• consumables use, storage &amp; disposal</li> <li>• Health &amp; Safety</li> <li>• escalation</li> <li>• information recording and reporting</li> <li>• obtaining work permissions</li> <li>• security &amp; confidentiality</li> </ul>
		1.2	Describe system functionality during normal operation
		1.3	Describe the effects of operational activities on system functionality
2	Operate systems	2.1	Use and operate the system following appropriate procedures
		2.2	Identify system faults and resolve or escalate system faults as appropriate
		2.3	Gather and record specified operational information
		2.4	Assess and minimise risks such as: <ul style="list-style-type: none"> <li>• loss or corruption of data</li> <li>• loss of service</li> <li>• damage to equipment</li> <li>• effects on customer operations</li> </ul>

3	Maintain and implement system operating procedures	3.1	Provide advice and guidance on system operation to immediate colleagues
		3.2	Select the procedures to be followed
		3.3	Schedule operational activities to minimise disruption to system functionality
		3.4	Collate operational information
Assessment requirements: NA			

Title:		ICT System Operation F/500/7338	
Level:		2	
Credit value:		9	
Guided learning hours:		45	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know the relevant parts of the operating system	1.1	Describe the relevant parts of operating procedures: <ul style="list-style-type: none"> <li>• required service levels (e.g. availability, quality)</li> <li>• routine maintenance</li> <li>• monitoring</li> <li>• data integrity (e.g. backups, anti-virus)</li> <li>• consumables use, storage &amp; disposal</li> <li>• Health &amp; Safety</li> <li>• escalation</li> <li>• information recording and reporting</li> <li>• obtaining work permissions</li> <li>• security &amp; confidentiality</li> </ul>
		1.2	Describe the functionality of relevant parts of the system
2	Operate specified parts of the system	2.1	Operate specified parts of the system <ul style="list-style-type: none"> <li>• operating specified system parts following procedures;</li> <li>• Recognising, resolving or escalating system faults;</li> <li>• gathering and recording specified operational information</li> </ul>
		2.2	Assess and minimize risks related to your own actions such as <ul style="list-style-type: none"> <li>• loss or corruption of data</li> <li>• loss of service</li> <li>• damage to equipment</li> </ul>
Assessment requirements: NA			

Title:		Technical advice and guidance F/601/3506	
Level:		2	
Credit value:		9	
Guided learning hours:		50	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know how to provide technical advice and guidance	1.1	Identify how technical advice and guidance can be used
		1.2	List the types of information which can form the basis of technical advice and guidance
		1.3	Identify organisational procedures which can apply to the provision of technical advice and guidance
		1.4	Identify circumstances where technical advice and guidance should be provided proactively rather than reactively in response to customer requests (e.g. to rectify known faults, to provide new functionality)
2	Provide reactive technical advice and guidance to customers on a range of topics	2.1	Identify the purposes for which technical advice and guidance is required
		2.2	Check that customers are entitled to receive the requested technical advice and guidance
		2.3	Communicate effectively with customers to obtain specified information to enable correct technical advice and guidance to be provided
		2.4	Interpret given technical information to produce advice and guidance in response to customer requests
		2.5	Communicate technical advice and guidance to customers in a given format and style, confirming customer understanding of the information provided

		2.6	Follow organisational procedures for responding to customer requests including the timely escalation of those for which technical advice and guidance can not be provided or does not resolve the request
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Assessment requirements: NA

Title:		Technical advice and guidance J/601/3507	
Level:		3	
Credit value:		12	
Guided learning hours:		75	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the context for providing technical advice and guidance	1.1	Describe how technical advice and guidance can be used to: <ul style="list-style-type: none"> <li>• resolve problems</li> <li>• improve performance</li> </ul>
		1.2	Describe the types, sources and applicability of information which can form the basis of technical advice and guidance: <ul style="list-style-type: none"> <li>• information from reference sources (e.g. manuals, handbooks, manufacturer's specifications)</li> <li>• information derived from the analysis of data (e.g. trend analysis, fault logs)</li> <li>• online information (e.g. manufacturer's websites, technical fora, discussion groups)</li> </ul>
		1.3	Describe the procedures and constraints which can apply to the provision of technical advice and guidance (e.g. escalation, commercial/contractual, legal/regulatory, information security)
		1.4	Identify circumstances where technical advice and guidance should be provided proactively rather than reactively in response to customer requests (e.g. to rectify known faults, to provide new functionality)
2	Provide reactive technical advice and guidance to customers on a range of topics	2.1	Determine the purposes for which technical advice and guidance is required
		2.2	Verify that customers are entitled to receive the requested technical advice and guidance



		2.3	Communicate effectively with customers to elicit sufficient information to enable correct technical advice and guidance to be provided
		2.4	Source and interpret relevant technical information to produce advice and guidance in response to customer requests
		2.5	Communicate technical advice and guidance to customers in a format and style which meets their needs, confirming customer understanding of the information provided
		2.6	Follow organisational procedures for responding to customer requests including the timely escalation of those for which technical advice and guidance can not be provided or does not resolve the request
3	Provide proactive technical advice and guidance to customers	3.1	Identify the purposes for which the technical advice and guidance is required
		3.2	Identify the customers, and their level of technical knowledge, to whom the technical advice and guidance should be provided
		3.3	Develop technical advice and guidance in a format and style which takes into account the customers' level of technical knowledge
		3.4	Follow organisational procedures for providing proactive technical advice and guidance
Assessment requirements: NA			

Title:		Technical Advice and Guidance Y/500/7345	
Level:		4	
Credit value:		15	
Guided learning hours:		90	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Control the provision of technical advice and guidance	1.1	Ensure that organisational procedures for providing technical advice and guidance are followed  • resolve problems • improve performance
		1.2	Describe the types, sources and applicability of information which can form the basis of technical advice and guidance:  • information from reference sources (e.g. manuals, handbooks, manufacturer's specifications) • information derived from the analysis of data (e.g. trend analysis, fault logs) • online information (e.g. manufacturer's websites, technical fora, discussion groups)
		1.3	Describe the procedures and constraints which can apply to the provision of technical advice and guidance (e.g. escalation, commercial/contractual, legal/regulatory, information security)
		1.4	Identify circumstances where technical advice and guidance should be provided proactively rather than reactively in response to customer requests (e.g. to rectify known faults, to provide new functionality)
2	Provide reactive technical advice and guidance to customers on a range of topics.	2.1	Determine the purposes for which technical advice and guidance is required
		2.2	Verify that customers are entitled to receive the requested technical advice and guidance

		2.3	Communicate effectively with customers to elicit sufficient information to enable correct technical advice and guidance to be provided
		2.4	Source and interpret relevant technical information to produce advice and guidance in response to customer requests
		2.5	Communicate technical advice and guidance to customers in a format and style which meets their needs, confirming customer understanding of the information provided
		2.6	Follow organisational procedures for responding to customer requests including the timely escalation of those for which technical advice and guidance can not be provided or does not resolve the request
3	Provide proactive technical advice and guidance to customers	3.1	Identify the purposes for which the technical advice and guidance is required
		3.2	Identify the customers, and their level of technical knowledge, to whom the technical advice and guidance should be provided
		3.3	Develop technical advice and guidance in a format and style which takes into account the customers' level of technical knowledge
		3.4	Follow organisational procedures for providing proactive technical advice and guidance
Assessment requirements: NA			

Title:		Cisco Exploration Network Fundamentals A/601/7537	
Level:		3	
Credit value:		10	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know the diverse types of network systems and devices in common use	1.1	Explain the importance of data networks and the Internet in supporting business communications and everyday activities
		1.2	Explain how communication works in data networks and the Internet
		1.3	Recognize the devices and services that are used to support communications across an Internet network
		1.4	Describe the importance of addressing and naming schemes at various layers of data networks
		1.5	Explain fundamental Ethernet concepts such as media, services, and operation
2	Know how different network technologies operate and communicate	2.1	Use network protocol models to explain the layers of communications in data networks
		2.2	Explain the role of protocols in data networks
3	Understand OSI and TCP/IP and their relationship to the operation of network systems	3.1	Describe the protocols and services provided by the application layer in the OSI and TCP/IP models and describe how this layer operates in various networks
		3.2	Analyze the operations and features of transport layer protocols and services
		3.3	Analyze the operations and feature of network layer protocols and services and explain the fundamental concepts of routing

		3.4	Describe the operation of protocols at the OSI data link layer and explain how they support communications
		3.5	Explain the role of physical layer protocols and services in supporting communications across data networks
		3.6	Analyse the operations and features of common application layer protocols such as HTTP, Domain Name System (DNS), Dynamic Host Configuration Protocol (DHCP), Simple Mail Transfer Protocol (SMTP), Telnet, and FTP
4	Be able to configure a workstation for connection to a network	4.1	Use Cisco command-line interface (CLI) commands to perform basic router and switch configuration and verification
		4.2	Build a simple Ethernet network using routers and switches
		4.3	Employ basic cabling and network designs to connect devices in accordance with stated objectives
5	Be able to design a sub-network scheme	5.1	Design, calculate, and apply subnet masks and addresses to fulfill given requirements
6	Be able to recommend improvements to an existing network infrastructure.	6.1	Verify small network operations and analyze data traffic
Assessment requirements: NA			

Title:		Cisco Exploration Routing Protocols and Concepts H/601/7421	
Level:		3	
Credit value:		10	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Be able to identify and understand different routing protocols	1.1	Describe the purpose, nature, and operations of a router
		1.2	Explain the critical role routers play in enabling communications across multiple networks
		1.3	Describe the purpose and nature of routing tables
		1.4	Describe how a router determines a path and switches packets
		1.5	Explain the route lookup process and determine the path packets will take in a network
		1.6	Describe the purpose of static routes and the procedure for configuring them
		1.7	Describe the role of dynamic routing protocols and place these protocols in the context of modern network design
		1.8	Describe how metrics are used by routing protocols and identify the metric types used by dynamic routing protocols
		1.9	Identify the characteristics of distance vector routing protocols
		1.10	Describe the network discovery process of distance vector routing protocols using Routing Information Protocol (RIP)
		1.11	Describe the functions, characteristics, and operations of the RIPv1 protocol
		1.12	Compare and contrast classful and classless IP addressing

		1.13	Describe classful and classless routing behaviors in routed networks
		1.14	Design and implement a classless IP addressing scheme for a given network
		1.15	Describe the main features and operations of the Enhanced Interior Gateway Routing Protocol (EIGRP)
		1.16	Describe the basic features and concepts of link-state routing protocols
		1.17	Describe the purpose, nature, and operations of the Open Shortest Path First (OSPF) Protocol
2	Configure a router to communicate with a WAN infrastructure	2.1	Configure and verify basic operations for a newly-installed router
		2.2	Configure and verify basic RIPv1, RIPv2, single area OSPF, and EIGRP operations in a small routed network
		2.3	Use advanced configuration commands with routers implementing EIGRP and OSPF
		2.4	Configure and verify basic operations for a newly-installed router
		2.5	Configure and verify static and default routing
3	Test and troubleshoot a network system to identify faults and quality of communication	3.1	Use router show and debug commands to troubleshoot common errors that occur in small routed networks
Assessment requirements: NA			

Title:		MTA: Networking Fundamentals M/602/6350	
Level:		2	
Credit value:		10	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understanding Network Infrastructures	1.1	Understand the concepts of the Internet, intranet, and extranet
		1.2	Understand local area networks (LANs)
		1.3	Understand wide area networks (WANs)
		1.4	Understand wireless networking
		1.5	Understand network topologies and access methods
2	Understanding Network Hardware	2.1	Understand switches
		2.2	Understand routers
		2.3	Understand media types
3	Understanding Protocols and Services	3.1	Understand the OSI model
		3.2	Understand IPv4
		3.3	Understand IPv6
		3.4	Understand names resolution
		3.5	Understand networking services
		3.6	Understand TCP/IP
Assessment requirements: NA			



## TQUK Level 3 Diploma in ICT Professional Competence

### Mandatory Units

Title:	Health and Safety in ICT Y/500/7183	
Level:	1	
Credit value:	3	
Guided learning hours:	15	
Learning outcomes	Assessment criteria	
The learner will:	The learner can:	
1. Comply with relevant Health & Safety procedures	1.1	Identify relevant organisational Health & Safety procedures
	1.2	Identify available sources of Health & Safety information
	1.3	Demonstrate how relevant Health & Safety procedures have been followed
Assessment requirements: NA		

Title:		Develop own effectiveness and professionalism D/503/5549	
Level:		3	
Credit value:		9	
Guided learning hours:		45	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Develop own personal and professional skills	1.1	Identify own development needs and the activities needed to meet them
		1.2	Obtain and review feedback from others on performance
		1.3	Agree personal goals and participate in development activities to meet them
2	Work as a member of a team to achieve defined goals and implement agreed plans	2.1	Effectively plan and manage own time
		2.2	Recognise and respect diversity, individual differences and perspectives
		2.3	Accept and provide feedback in a constructive and considerate manner
		2.4	Understand the responsibilities, interests and concerns of colleagues
		2.5	Identify and reduce obstacles to effective teamwork
3	Understand what is meant by professional practice	3.1	Describe the implications, and applicability for IT professionals of: <ul style="list-style-type: none"> <li>• General Data Protection Regulation</li> <li>• Computer Misuse Act</li> </ul>
		3.2	Identify the role of professional bodies for IT, and the benefits of membership to individuals and organisations
		3.3	Describe quality management systems and standards for systems development
4	Understand the ethical and legislative environment relating to IT activities	4.1	Identify the types of conflicts of interest which can arise for IT professionals

		4.2	Describe the impact on an IT organisation of legislation covering: <ul style="list-style-type: none"> <li>• Processing of financial transactions</li> <li>• Health and Safety</li> <li>• Privacy, Confidentiality and Security</li> <li>• Copyright and Intellectual Property Rights</li> </ul>
5	Improve organisational effectiveness	5.1	Describe the aims and objectives of the organisation
		5.2	Describe the organisation's brand or image and how it can be promoted
		5.3	Identify the organisation's structure, roles and responsibilities
		5.4	Identify potential improvements to organisational effectiveness
Assessment requirements: NA			

Title:	Customer Care in ICT A/500/7158	
Level:	2	
Credit value:	9	
Guided learning hours:	45	
Learning outcomes	Assessment criteria	
The learner will:	The learner can:	
1. Know how to provide customer care by establishing customer relationships	1.1	Describe the uses of interpersonal communication techniques such as: <ul style="list-style-type: none"> <li>• verbal (e.g. intonation, tone and feedback (sometimes referred to as verbal attends)) and non-verbal techniques (e.g. smiling while talking on the phone, body language).</li> <li>• attentive listening (i.e. difference between hearing and listening).</li> <li>• positive and negative language.</li> <li>• active listening (e.g. summarising, paraphrasing, body language);</li> <li>• listening barriers (e.g. background noise, distractions, lack of concentration);</li> <li>• types of question (e.g. open, closed and probing)</li> </ul>
	1.2	Describe the relevant parts of the organisational requirements for customer care including; <ul style="list-style-type: none"> <li>• customer service procedures (e.g. how to log customer information, how to initiate service calls, how to complete a sale);</li> <li>• authorisation procedures (e.g. how to confirm caller identity, how to validate requests);</li> <li>• escalation, resolution and complaint handling;</li> <li>• quality assurance procedures;</li> <li>• compliance with relevant legislation and regulations (e.g. data protection, financial services);</li> <li>• maintenance and communication of organisational brand or image;</li> <li>• organisational aims and objectives</li> </ul>
	1.3	Describe what the implications of customer satisfaction

		<p>are</p> <ul style="list-style-type: none"> <li>• customer retention;</li> <li>• working relationships</li> </ul>
	1.4	<p>Describe the relevant methods of measuring customer satisfaction levels such as</p> <ul style="list-style-type: none"> <li>• predefined formal feedback</li> <li>• unsolicited feedback</li> <li>• anecdotal feedback</li> </ul>
2. Provide customer care by establishing customer relationships	2.1	Comply with organisational requirements
	2.2	<p>Communicate interpersonally on familiar subjects such as:</p> <ul style="list-style-type: none"> <li>• following organisational guidelines and procedures</li> <li>• articulating and expressing ideas clearly and concisely</li> <li>• listening actively (e.g. by taking notes)</li> <li>• clarifying and confirming understanding (e.g. by paraphrasing or repetition).</li> <li>• responding to questions with accurate information</li> <li>• ensuring content is appropriate to the needs of the audience</li> <li>• identifying and avoiding listening barriers</li> <li>• maintaining focus on the purpose of the communication</li> </ul>
	2.3	<p>Providing customer interaction such as;</p> <ul style="list-style-type: none"> <li>• focuses on addressing customer needs</li> <li>• interacts in a sensitive and helpful manner with the customer.</li> <li>• responds to customer requests on time, accurately, pleasantly and professionally</li> <li>• builds a trusting relationship with the customer</li> <li>• keeps self and customer focused</li> <li>• maintains consistent communication style</li> </ul>
	2.4	<p>Provide service delivery such as;</p> <ul style="list-style-type: none"> <li>• recognising own limitations;</li> <li>• escalating customer issues following organisational requirements</li> <li>• meets own commitments to customers;</li> <li>• follows up customer problems and issues</li> </ul>
	2.5	<p>Handle complaints from customers such as;</p> <ul style="list-style-type: none"> <li>• using probing questions;</li> <li>• displaying patience and understanding with demanding or emotional customers</li> </ul>

	2.6	Gather specified customer satisfaction information
Assessment requirements: NA		

Title:		Customer Care in ICT F/500/7159	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
<b>Learning outcomes</b>		<b>Assessment criteria</b>	
The learner will:		The learner can:	
1	Understand how to provide ICT customer care by developing customer relationships	1.1	Describe the uses of interpersonal communication techniques
		1.2	Explain the different approaches and methods used for supporting technical and non-technical customers
		1.3	Describe the organisational requirements for ICT customer care
		1.4	Explain the effect of ICT customer care on the rest of the organisation
2	Be able to provide ICT customer care by developing customer relationships	2.1	Monitor compliance with organisational requirements for ICT customer support
		2.2	Follow organisational guidelines and procedures to communicate with customers
		2.3	Interact effectively with customers to achieve agreed outcome
3	Be able to contribute to improving the delivery of service	3.1	Describe the implications of customer satisfaction for the business
		3.2	Describe the methods of measuring customer satisfaction levels
		3.3	Suggest improvements to ICT service delivery
		3.4	Handle complaints from customers following organisational guidelines
		3.5	Gather specified customer satisfaction information
		3.6	Analyse specified customer satisfaction information

		3.7	Report on specified customer satisfaction information
Assessment requirements: NA			



Title:		Computer Games Development A/601/3164	
Level:		2	
Credit value:		4	
Guided learning hours:		28	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know computer game components and the computer games industry	1.1	Identify the hardware and software components of a video game system
		1.2	Identify the activities required to develop modern computer games
		1.3	Describe the features of an existing computer game
2	Know how to develop a computer game specification	2.1	Contribute to the production of a pre-production proposal document for a computer game project
		2.2	Identify the components required to develop a computer game
		2.3	Contribute to the productions of an implementation plan for a computer game development
3	Implement a component of a computer game	3.1	Design a component of a computer game
		3.2	Develop a component of a computer game
Assessment requirements: NA			

Title:		Computer Games Development F/601/3165	
Level:		3	
Credit value:		10	
Guided learning hours:		71	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand computer game architecture and components	1.1	Describe the hardware and software components of a video game system
2	Understand the computer games industry	2.1	Describe the stages of evolution of computer game industry
		2.2	Describe the roles and activities required to develop modern computer games
		2.3	Explain computer game development processes and terminology
		2.4	Explain computer game programming methods and techniques
3	Be able to evaluate existing computer games	3.1	Produce a structured evaluation of an existing computer game
4	Develop a computer game specification	4.1	Produce a pre-production proposal document for a computer game project
		4.2	Identify the components required to develop a computer game
		4.3	Produce an implementation plan for a computer game development
5	Implement elements of a computer game	5.1	Design components of a computer game
		5.2	Develop components of a computer game
		5.3	Test components of a computer game

Assessment requirements: NA

Title:		Creating an object oriented computer program L/601/3184	
Level:		3	
Credit value:		12	
Guided learning hours:		90	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Implement a software design using object oriented programming	1.1	Identify the objects and data and file structures required to implement a given design
		1.2	Select, declare and initialise variable and data structure types and sizes to implement design requirements
		1.3	Define relationships between objects to implement design requirements
		1.4	Implement message passing between objects to implement design requirements
		1.5	Implement object behaviours using control structures to meet the design algorithms
		1.6	Select and declare file structures to meet design file storage requirements
		1.7	Select and use standard input/output commands to implement design requirements
		1.8	Make effective use of operators and predefined functions
		1.9	Make effective use of an Integrated Development Environment (IDE) including code and screen templates
2	Refine an object oriented program to improve quality	2.1	Use an agreed standard for naming, comments and code layout
		2.2	Make effective use of encapsulation, polymorphism and inheritance
		2.3	Implement data validation for inputs
		2.4	Identify and implement opportunities for error handling and reporting

3	Test the operation of an object oriented driven program	3.1	Make effective use of the debugging facilities available in the IDE
		3.2	Prepare a test strategy
		3.3	Select suitable test data and determine expected test results
		3.4	Record actual test results to enable comparison with expected results
		3.5	Analyse actual test results against expected results to identify discrepancies
		3.6	Investigate test discrepancies to identify and rectify their causes
4	Document an object oriented driven program	4.1	Create on-screen help to assist the users of a computer program
		4.2	Create documentation for the support and maintenance of a computer program
Assessment requirements: NA			

Title:		Data Modelling L/601/3203	
Level:		3	
Credit value:		9	
Guided learning hours:		75	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the concepts of logical data modelling	1.1	Describe entities and the types of attributes which can be assigned to them
		1.2	Describe the type of relationships which can exist between entities
		1.3	Explain the objectives of data normalisation and describe the Third Normal Form (3NF)
		1.4	Explain the purpose of keys
		1.5	Describe an application where un-normalized or de-normalised data may be used
		1.6	Describe the types of standard notation which can be used to represent data sets as logical data models
2	Use data modelling techniques to create logical data models	2.1	Identify and name entities, assigning the correct attributes
		2.2	Identify and represent entity relationships, assigning the correct type
		2.3	Normalise a data set to Third Normal Form (3NF)
3	Use data modelling techniques to refine logical data models	3.1	Identify entities which will be accessed for enquiry and/or update
		3.2	Identify access sequences and triggers
		3.3	Create access rules/methods
		3.4	Use a standard notation to describe the logical data model of a normalised data set

Assessment requirements: NA

Title:

Data structures and algorithms

		R/601/3297	
Level:		4	
Credit value:		15	
Guided learning hours:		90	
<b>Learning outcomes</b>		<b>Assessment criteria</b>	
The learner will:		The learner can:	
1	Understand the structure and uses of various data structures and their associated algorithms	1.1	Define the terminology used to describe the elements of data structures including arrays, linked lists, stacks, queues, trees, graphs and sets
		1.2	Explain how one-dimensional and multi-dimensional arrays are structured and processed
		1.3	Explain how linked lists (including singly, doubly and circular linked lists) are structured and processed
		1.4	Explain how stacks and queues are structured and processed
		1.5	Explain how trees and graphs are structured and processed
		1.6	Explain how sets are structured and processed
2	Understand the operation of established algorithms	2.1	Explain the operation and performance of sorting and search algorithms
		2.2	Explain the operation of recursive algorithms and identify situations when recursion is used
3	Select appropriate data structures and associated algorithms for specified problems	3.1	Given a specified problem, choose a data structure and associated algorithm and justify the selection
4	Describe the data structures and associated algorithms in a non-executable program specification language	4.1	Specify the structure and associated algorithms of arrays, linked lists, stacks, queues, trees, graphs and sets in well-established specification languages
		4.2	Specify the behaviour of sorting, searching and recursive algorithms using well-established specification languages
		4.3	Demonstrate the operation of data-structures and algorithms by hand execution of the associated algorithms with specified test data



5	Implement data structures and algorithms in an executable programming language	5.1	Implement arrays, linked lists, stacks, queues, trees, graphs and sets in the context of well-defined problems in an executable programming language
		5.2	Implement sorting, searching and recursive algorithms in the context of well-defined problems in an executable programming language
		5.3	Demonstrate the correct operation of data structure algorithms implemented in an executable programming language by devising and executing testing strategies
6	Understand how strings are structured and processed	6.1	Explain the structure of strings
		6.2	Identify common string operations
		6.3	Demonstrate the outcome of string operations on specified strings
Assessment requirements: NA			

Title:		Database Software T/502/4556	
Level:		3	
Credit value:		6	
Guided learning hours:		45	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Plan, create and modify relational database tables to meet requirements	1.1	Explain how a relational database design enables data to be organised and queried
		1.2	Plan and create multiple tables for data entry with appropriate fields and properties
		1.3	Set up and modify relationships between database tables
		1.4	Explain why and how to maintain data integrity
		1.5	Respond appropriately to problems with database tables
		1.6	Use database tools and techniques to ensure data integrity is maintained
2	Enter, edit and organise structured information in a database	2.1	Design and create forms to access, enter, edit and organise data in a database
		2.2	Select and use appropriate tools and techniques to format data entry forms
		2.3	Check data entry meets needs, using IT tools and making corrections as necessary
		2.4	Respond appropriately to data entry errors
3	Use database software tools to create, edit and run data queries and produce reports	3.1	Explain how to select, generate and output information from queries according to requirements
		3.2	Create and run database queries to display, amend or calculate selected data
		3.3	Plan and produce database reports from a multiple-table relational database

		3.4	Select and use appropriate tools and techniques to format database reports
		3.5	Check reports meet needs, using IT tools and making corrections as necessary
Assessment requirements: NA			

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Title:	Technical fault diagnosis
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		A/601/3293
Level:		3
Credit value:		12
Guided learning hours:		75
<b>Learning outcomes</b>		<b>Assessment criteria</b>
The learner will:		The learner can:
1	Understand the processes, methods and information that are used in the diagnostic process	1.1 Describe the steps of the diagnostic process including: <ul style="list-style-type: none"> <li>• fault validation</li> <li>• information gathering</li> <li>• information analysis</li> <li>• solution identification</li> </ul>
		1.2 Describe the types of diagnostic information that are commonly needed: <ul style="list-style-type: none"> <li>• problem description</li> <li>• problem history</li> <li>• problem location</li> <li>• technical information on a specified range of products including the system under investigation</li> </ul>
		1.3 Explain the following diagnostic methods and give examples of their appropriate use: <ul style="list-style-type: none"> <li>• substitution</li> <li>• replication</li> <li>• performance and functional testing</li> <li>• environment change</li> </ul>
		1.4 Explain how the following considerations can affect fault diagnosis: <ul style="list-style-type: none"> <li>• minimisation of service disruption during diagnostics</li> <li>• individual responsibility and authority</li> <li>• escalation procedure</li> <li>• service level agreements</li> </ul>
		1.5 Interpret detailed technical information on a range of products
2	Be able to diagnose faults with a wide range of causes	2.1 Select and correctly use appropriate diagnostic tools to carry out non-routine diagnosis

		2.2	Select and use given sources of diagnostic and other technical information
		2.3	Identify and interpret relevant information to support the diagnosis
		2.4	Analyse information to diagnose faults with a wide range of causes, using at least three of the following approaches: <ul style="list-style-type: none"> <li>• trend analysis</li> <li>• what-if scenarios</li> <li>• gap analysis</li> <li>• identification of cause and effect</li> <li>• flow charts</li> </ul>
		2.5	Describe possible ways to prevent reoccurrence of diagnosed faults
3	Select remedies for non-routine faults	3.1	Select a suitable remedy to rectify identified faults taking into account the following: <ul style="list-style-type: none"> <li>• business or service impact</li> <li>• resource and skill availability</li> <li>• ease of implementation</li> <li>• cost effectiveness</li> <li>• performance</li> <li>• compatibility</li> <li>• time</li> <li>• permanence</li> </ul>
		3.2	Identify possible ways to prevent reoccurrence of diagnosed faults
4	Maintain diagnosis and remedy records	4.1	Accurately document the diagnosis activities undertaken including: <ul style="list-style-type: none"> <li>• fault description</li> <li>• supporting information</li> <li>• diagnostic tools etc used</li> <li>• cause of fault</li> <li>• remedy selected</li> </ul>
Assessment requirements: NA			

Title:	Technical fault diagnosis
	A/601/3292

Level:	2
Credit value:	9
Guided learning hours:	45
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1 Know the process, methods and information that are used in the diagnostic process	1.1 Identify the steps of the diagnostic process including: <ul style="list-style-type: none"> <li>• fault validation</li> <li>• information gathering</li> <li>• information analysis</li> <li>• solution identification</li> </ul>
	1.2 Describe the types of diagnostic information that are commonly needed and their purpose
	1.3 Describe common diagnostic methods to include: <ul style="list-style-type: none"> <li>• substitution</li> <li>• replication</li> <li>• performance and functional testing</li> <li>• environment change</li> </ul>
	1.4 List typical considerations affecting fault diagnosis, e.g: <ul style="list-style-type: none"> <li>• minimisation of service disruption during diagnostics</li> <li>• individual responsibility and authority</li> <li>• escalation procedure</li> <li>• level of service</li> </ul>
2 Apply processes to diagnose faults with a known range of causes and assist in the diagnosis of other faults	2.1 Correctly use appropriate diagnostic tools e.g. <ul style="list-style-type: none"> <li>• electrical/electronic test instruments</li> <li>• on-board self-test programs</li> <li>• loopback devices</li> <li>• on-line/remote monitoring</li> <li>• diagnostic software</li> </ul>
	2.2 Effectively use given sources of information to support diagnosis

		2.3	Analyse information to identify the cause of faults, using two of the following approaches: <ul style="list-style-type: none"> <li>• gap analysis</li> <li>• identification of cause and effect</li> <li>• flow charts</li> </ul>
3	Select fault remedies from given alternatives	3.1	Select, from given alternatives, a suitable remedy to rectify identified faults taking into account the following: <ul style="list-style-type: none"> <li>• business or service impact</li> <li>• resource and skill availability</li> <li>• ease of implementation</li> </ul>
		3.2	Identify possible ways to prevent reoccurrence of diagnosed faults
4	Maintain diagnosis and remedy records	4.1	Accurately document the diagnosis activities undertaken including: <ul style="list-style-type: none"> <li>• fault description</li> <li>• supporting information</li> <li>• diagnostic tools etc used</li> <li>• cause of fault</li> <li>• remedy selected</li> </ul>
Assessment requirements: NA			

Title:		Fibre Telecommunications Techniques	
		H/601/0663	
Level:		3	
Credit value:		15	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the properties, structures and components included in typical fibre telecommunications networks	1.1	Identify different types of optical fibre
		1.2	Identify the physical components required to build a fibre infrastructure
		1.3	Explain the different structures used in fibre networks, and when different structures should be used
2	Understand safe working practices s when working with optical fibre networks	2.1	Identify key safety considerations when working with optical fibre
		2.2	Identify any existing risk assessments for working with fibre networks
		2.3	Explain how to dispose of redundant or damaged optical fibres
3	Know the quality standards and documentation requirements when working on the optical fibre network	3.1	Explain the quality standards that apply for all installation and maintenance work on the optical fibre network
		3.2	Explain what technical documentation needs to be completed before and after undertaking work on the fibre network
4	Prepare and install optical fibre components in exchanges and customer premises	4.1	Prepare optical fibre components for use
		4.2	Provide fibres from a customer premises point of entry to the equipment fibre pigtailed for both two-fibre and single-fibre working
		4.3	Test components before commissioning the components
5	Build an external fibre network	5.1	Prepare cables for splicing
		5.2	Manage cables on single circuit trays



		5.3	Splice fibres cables on single circuit trays
6	How to construct and re-enter a fibre closure	6.1	Explain where various fibre options should be used
		6.2	Construct a fibre closure
		6.3	Re-enter an existing closure
Assessment requirements: NA			

Title:		Working with ICT hardware and equipment K/500/7382	
Level:		2	
Credit value:		9	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know how to plan and carry out a range of ICT hardware and equipment work activities under direction	1.1	Describe the working process such as: <ul style="list-style-type: none"> <li>• tools and techniques to be used;</li> <li>• procedures to be followed;</li> <li>• procedures for information recording.</li> <li>• customer requirements;</li> <li>• product specifications</li> <li>• planning own work</li> </ul>
		1.2	Explain how regulatory requirements affect work activities
2	Plan and carry out a range of ICT hardware and equipment work activities under direction	2.1	Use appropriate tools and techniques safely
		2.2	Follow relevant working procedures such as: <ul style="list-style-type: none"> <li>• Health &amp; Safety</li> <li>• quality</li> <li>• use of tools</li> <li>• configuration</li> <li>• testing; logistics</li> <li>• waste disposal</li> <li>• problem escalation</li> <li>• information recording</li> <li>• obtaining work permissions</li> <li>• security and confidentiality</li> <li>• customer acceptance</li> <li>• commissioning</li> <li>• product registration</li> </ul>
		2.3	Obtain specified resources
		2.4	Record relevant information

		2.5	Communicate the progress and outcome of work to the appropriate people
3	Minimise risks related to ICT hardware and equipment work activities	3.1	<p>Assess and minimise risks related to work activities such as:</p> <ul style="list-style-type: none"> <li>• loss or corruption of data</li> <li>• loss of service</li> <li>• damage to equipment</li> </ul>
Assessment requirements: NA			

Title:		Investigating and defining customer requirements for ICT systems R/601/3249	
Level:		3	
Credit value:		12	
Guided learning hours:		75	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Investigate existing systems and processes	1.1	Use three of the following investigative methods: <ul style="list-style-type: none"> <li>• observations</li> <li>• examination of existing documents, records or software</li> <li>• questionnaires</li> <li>• site surveys</li> </ul>
		1.2	Record the results of investigations using standard documentation
		1.3	Explain the importance of preserving the confidentiality of customer information
2	Analyse information to identify needs and constraints	2.1	Describe the type of defect, including inaccuracy, duplication and omission, which can arise in information
		2.2	Describe the types of customer needs and constraints which can affect the design of an ICT system
		2.3	Analyse information to identify customer needs for: <ul style="list-style-type: none"> <li>• data to be stored and processed</li> <li>• functionality in terms of inputs, processes and outputs</li> <li>• capacity including numbers of users, throughput, and data storage</li> </ul>
		2.4	Analyse information to identify customer constraints
		2.5	Record the results of analyses using standard documentation
Assessment requirements: NA			

Title:		Investigating and defining customer requirements for ICT systems R/602/1772	
Level:		4	
Credit value:		15	
Guided learning hours:		90	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Control the investigation of existing and proposed systems and processes	1.1	Select and use the investigative methods which will elicit relevant information about existing and proposed systems and processes
		1.2	Create the documentation required to record the results of investigations
		1.3	Ensure that investigative methods are applied correctly and all relevant information is recorded using standard documentation
		1.4	Ensure that the confidentiality of customer information is preserved
		1.5	Provide advice and guidance to colleagues on investigation and analysis of information
2	Analyse information to identify needs and constraints	2.1	Explain the types of defect, and their causes which can arise in information
		2.2	Describe methods of minimising defects in information
		2.3	Explain how customer needs and constraints can affect the design of an ICT system
		2.4	Analyse information to identify customer needs and priorities for: <ul style="list-style-type: none"> <li>• data to be stored and processed</li> <li>• functionality in terms of inputs, processes and outputs</li> <li>• capacity including numbers of users, throughput, and data storage</li> </ul>
		2.5	Analyse information to identify customer constraints

	2.6	Verify that identified needs, priorities and constraints meet customer requirements
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Assessment requirements: NA
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Title:		Remote Support for Products and Services D/500/7217	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the organisational requirements for customer care and the supported products and services	1.1	Describe the products and services to be supported including: <ul style="list-style-type: none"> <li>• benefits of the products and services;</li> <li>• frequently used product or service options;</li> <li>• advanced features, benefits and options of products and services;</li> <li>• how to identify alternative products or services to meet customers needs;</li> <li>• how the products or services interact with others commonly available;</li> <li>• where to obtain information on infrequently used product or service features or options;</li> <li>• the impact of introducing new products and services</li> </ul>
		1.2	Describe the organisational requirements for customer care including: <ul style="list-style-type: none"> <li>• customer service procedures (e.g. how to log customer information, how to initiate service calls, how to complete a sale);</li> <li>• authorisation procedures (e.g. how to confirm caller identity, how to validate requests);</li> <li>• escalation, resolution and complaint handling;</li> <li>• quality assurance procedures;</li> <li>• compliance with relevant legislation and regulations (e.g. data protection, financial services);</li> <li>• maintenance and communication of organisational brand or image;</li> <li>• organisational aims and objectives</li> </ul>
2	Support products or services	2.1	Comply with organisational requirements

	2.2	Confirm customer identity, validate requests and inform customers when authorisation criteria are not met
	2.3	<p>Communicate information on specified products or services:</p> <ul style="list-style-type: none"> <li>• identifying customers needs;</li> <li>• accurately collecting and logging relevant information from the customer;</li> <li>• providing product and service features to customers;</li> <li>• ensuring customer understanding of the information provided;</li> <li>• categorising requests and directing customers appropriately;</li> <li>• managing customer expectations (e.g. by confirming outcomes, timescales or costs);</li> <li>• discussing advantages and disadvantages of complex products and services;</li> <li>• discussing how the service product best fits the customers' needs;</li> <li>• keeping customer informed on progress;</li> <li>• asking effective and appropriate probing questions</li> </ul>
	2.4	Make recommendations based on customer needs
	2.5	<p>Resolve and escalate requests and handle basic complaints</p> <ul style="list-style-type: none"> <li>• using probing questions;</li> <li>• displaying patience and understanding with demanding or emotional customers</li> <li>• diffusing volatile situations using appropriate communication techniques</li> <li>• delivering difficult messages to customers and explaining the reasons behind the decision</li> <li>• assessing priority of complaints</li> <li>• resolving routine complaints</li> </ul>
Assessment requirements: NA		



Title:		Systems Architecture A/601/3505	
Level:		4	
Credit value:		10	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the representation of information within a computer and the way it is processed	1.1	Explain how number systems and data representation are used to store information in a computer
		1.2	Explain the role of input, output and storage devices
		1.3	Describe the characteristics of C.P.U. components and the operation of the Fetch Execute Cycle
		1.4	Describe the operation of a peripheral device, controller hardware and physical connection using correct technical terminology and reference to relevant standards
2	Use and develop the operating environment of current computer systems	2.1	Use and configure operating system interfaces and functions
		2.2	Explain the role of process management and concurrent processes in computer operating systems
		2.3	Describe how operating system features can contribute to data and system security
3	Understand the communication process in distributed operating systems and computer networks	3.1	Describe the function and operation of distributed operating systems
		3.2	Describe the functions of data communications systems in enabling network and distributed systems
4	Understand distributed applications and transaction processing in mainframe systems	4.1	Describe the operation and functions of mainframe systems
		4.2	Describe the evolution of and characteristics of distributed applications
		4.3	Describe data and process distribution

	4.4	Explain distribution and transaction transparency
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Assessment requirements: NA
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Title:		Security of ICT Systems D/500/7220	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know the common types of security threat to an organisation, its IT system and its data, with relevant methods and procedures for protecting it	1.1	Describe the common types of security breach that can affect the organisation, such as: <ul style="list-style-type: none"> <li>• unauthorised use of a system without damage to data;</li> <li>• unauthorised removal or copying of data or code from a system;</li> <li>• damage to or destruction of physical system assets and environment</li> <li>• damage to or destruction of data or code inside or outside the system</li> <li>• preventing normal use of a system (eg denial of service attack)</li> </ul>
		1.2	Describe specified data protection methods: <ul style="list-style-type: none"> <li>• system data security facilities;</li> <li>• surveillance and monitoring methods;</li> <li>• effects of system configuration on data protection</li> </ul>
		1.3	Describe specified methods of providing physical security for ICT systems <ul style="list-style-type: none"> <li>• access control devices (e.g. locks, biometric controls, CCTV) and their configuration</li> <li>• limiting visibility of data (e.g. by positioning of monitors, using encryption)</li> <li>• shielding (e.g. cable screening, Faraday cages)</li> <li>• types and appropriate uses of access records and authorisations</li> <li>• how to allocate access authority</li> </ul>
		1.4	Describe relevant organisational security procedures

2	Apply security measures	2.1	<p>Configure and apply specified security tools to identify and prevent breaches of security, such as:</p> <ul style="list-style-type: none"> <li>• internal system tools (e.g. passwords and permissions, malware scanning, firewall, VPN, authentication and encryption facilities)</li> <li>• external tools (e.g. access control devices)</li> </ul>
3	Monitor security procedures	3.1	<p>Assist in ensuring compliance with organisational security procedures, including:</p> <ul style="list-style-type: none"> <li>• participating in security audits</li> <li>• gathering and recording information on security</li> <li>• initiating suitable actions to deal with identified breaches of security</li> </ul>
Assessment requirements: NA			

Title:		Security of ICT Systems H/500/7221	
Level:		4	
Credit value:		15	
Guided learning hours:		90	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the security threats to an IT system, their operational impact and the methods available to combat them	1.1	Describe the data protection methods that are relevant to the organisation
		1.2	Describe physical security methods in use
		1.3	Describe organisational security procedures
		1.4	Describe types of possible security breaches and their operational impacts
2	Maintain and improve ICT security procedures	2.1	Review and update security procedures
		2.2	Ensure compliance with security procedures by scheduling security audits
		2.3	Initiate suitable actions to deal with identified breaches of security
		2.4	Inform colleagues of their security responsibilities and confirm their understanding at suitable intervals
3	Implement security procedures	3.1	Schedule and carry out security risk assessments
		3.2	Select appropriate security tools for the organisation or department to use
Assessment requirements: NA			

Title:		Security of ICT Systems K/500/7219	
Level:		1	
Credit value:		3	
Guided learning hours:		20	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know the particular threats to an IT system and its data with specified methods and procedures for protecting it	1.1	Describe specified data protection methods, such as: <ul style="list-style-type: none"> <li>malware detection software (anti-virus, anti spyware etc)</li> <li>Internet security suites (firewall, malware detection, anti-phishing and spam filters)</li> <li>use and protection of passwords or access codes</li> <li>backup and storage</li> </ul>
		1.2	Describe specified methods of providing physical security for ICT systems: <ul style="list-style-type: none"> <li>access control devices (e.g locks, biometric controls, CCTV)</li> <li>limiting visibility of data (e.g. by positioning of monitors, using encryption)</li> <li>shielding (e.g. cable screening, Faraday cages)</li> </ul>
		1.3	Describe relevant organisational security procedures
		1.4	Describe the type of security breaches that can occur in IT systems, such as <ul style="list-style-type: none"> <li>unauthorised use of a system without damage to data;</li> <li>unauthorised removal or copying of data or code from a system;</li> <li>damage to or destruction of physical system assets and environment</li> <li>damage to or destruction of data or code inside or outside the system</li> <li>preventing normal use of a system (eg denial of service attack)</li> </ul>

2	Comply with relevant security requirements to protect an IT system and its data	2.1	Use specified security tools to identify and prevent breaches of security: <ul style="list-style-type: none"> <li>• internal system tools (e.g. passwords, anti-virus software, firewalls and encryption facilities)</li> <li>• external tools (e.g. access control devices)</li> </ul>
		2.2	Comply with organisational security procedures
Assessment requirements: NA			

Title:		Software installation and upgrade D/500/7329	
Level:		2	
Credit value:		9	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand relevant parts of the installation/upgrade process	1.1	Describe the relevant parts of the software installation and upgrade process including: <ul style="list-style-type: none"> <li>• procedures to be followed</li> <li>• procedures for information recording</li> <li>• software storage locations to be used</li> <li>• specifications of the software</li> </ul>
		1.2	Describe relevant software loading facilities
2	Install/upgrade software	2.1	Follow relevant installation/upgrade procedures
		2.2	Use appropriate software loading facilities
		2.3	Record relevant information
		2.4	Communicate the progress and outcome of the installation/upgrade to the appropriate people
Assessment requirements: NA			



Title:		Software installation and upgrade R/500/7330	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the installation/upgrade process	1.1	Describe the software installation and upgrade process including: <ul style="list-style-type: none"> <li>• procedures to be followed</li> <li>• procedures for information recording</li> <li>• software storage locations to be used</li> <li>• specifications of the software</li> </ul>
		1.2	Describe the capabilities of software loading facilities
2	Carry out or control a wide range of installations or upgrades	2.1	Provide guidance on installation/upgrade procedures to immediate colleagues
		2.2	Obtain and allocate required materials
		2.3	Select the installation/upgrade procedures to be followed
		2.4	Select software loading facilities to be used
Assessment requirements: NA			

Title:		System Operation A/500/7340	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know how to operate the system	1.1	Explain the operating procedures that are applicable to the system, such as: <ul style="list-style-type: none"> <li>• required service levels (e.g. availability, quality)</li> <li>• routine maintenance</li> <li>• monitoring</li> <li>• data integrity (e.g. backups, anti-virus)</li> <li>• consumables use, storage &amp; disposal</li> <li>• Health &amp; Safety</li> <li>• escalation</li> <li>• information recording and reporting</li> <li>• obtaining work permissions</li> <li>• security &amp; confidentiality</li> </ul>
		1.2	Describe system functionality during normal operation
		1.3	Describe the effects of operational activities on system functionality
2	Operate systems	2.1	Use and operate the system following appropriate procedures
		2.2	Identify system faults and resolve or escalate system faults as appropriate
		2.3	Gather and record specified operational information

		2.4	Assess and minimise risks such as: <ul style="list-style-type: none"> <li>• loss or corruption of data</li> <li>• loss of service</li> <li>• damage to equipment</li> <li>• effects on customer operations</li> </ul>
3	Maintain and implement system operating procedures	3.1	Provide advice and guidance on system operation to immediate colleagues
		3.2	Select the procedures to be followed
		3.3	Schedule operational activities to minimise disruption to system functionality
		3.4	Collate operational information
Assessment requirements: NA			

Title:		ICT System Operation F/500/7338	
Level:		2	
Credit value:		9	
Guided learning hours:		45	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know the relevant parts of the operating system	1.1	Describe the relevant parts of operating procedures: <ul style="list-style-type: none"> <li>• required service levels (e.g. availability, quality)</li> <li>• routine maintenance</li> <li>• monitoring</li> <li>• data integrity (e.g. backups, anti-virus)</li> <li>• consumables use, storage &amp; disposal</li> <li>• Health &amp; Safety</li> <li>• escalation</li> <li>• information recording and reporting</li> <li>• obtaining work permissions</li> <li>• security &amp; confidentiality</li> </ul>
		1.2	Describe the functionality of relevant parts of the system
2	Operate specified parts of the system	2.1	Operate specified parts of the system: <ul style="list-style-type: none"> <li>• operating specified system parts following procedures;</li> <li>• Recognising, resolving or escalating system faults;</li> <li>• gathering and recording specified operational information</li> </ul>
		2.2	Assess and minimize risks related to your own actions such as: <ul style="list-style-type: none"> <li>• loss or corruption of data;</li> <li>• loss of service;</li> <li>• damage to equipment</li> </ul>
Assessment requirements: NA			

Title:		Technical advice and guidance F/601/3506	
Level:		2	
Credit value:		9	
Guided learning hours:		50	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know how to provide technical advice and guidance	1.1	Identify how technical advice and guidance can be used
		1.2	List the types of information which can form the basis of technical advice and guidance
		1.3	Identify organisational procedures which can apply to the provision of technical advice and guidance
		1.4	Identify circumstances where technical advice and guidance should be provided proactively rather than reactively in response to customer requests (e.g. to rectify known faults, to provide new functionality)
2	Provide reactive technical advice and guidance to customers on a range of topics	2.1	Identify the purposes for which technical advice and guidance is required
		2.2	Check that customers are entitled to receive the requested technical advice and guidance
		2.3	Communicate effectively with customers to obtain specified information to enable correct technical advice and guidance to be provided
		2.4	Interpret given technical information to produce advice and guidance in response to customer requests
		2.5	Communicate technical advice and guidance to customers in a given format and style, confirming customer understanding of the information provided
		2.6	Follow organisational procedures for responding to customer requests including the timely escalation of those for which technical advice and guidance cannot be provided or does not resolve the request

Title:		Technical advice and guidance J/601/3507	
Level:		3	
Credit value:		12	
Guided learning hours:		75	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand the context for providing technical advice and guidance	1.1	Describe how technical advice and guidance can be used to: <ul style="list-style-type: none"> <li>• resolve problems</li> <li>• improve performance</li> </ul>
		1.2	Describe the types, sources and applicability of information which can form the basis of technical advice and guidance: <ul style="list-style-type: none"> <li>• information from reference sources (e.g. manuals, handbooks, manufacturer's specifications)</li> <li>• information derived from the analysis of data (e.g. trend analysis, fault logs)</li> <li>• online information (e.g. manufacturer's websites, technical fora, discussion groups)</li> </ul>
		1.3	Describe the procedures and constraints which can apply to the provision of technical advice and guidance (e.g. escalation, commercial/contractual, legal/regulatory, information security)
		1.4	Identify circumstances where technical advice and guidance should be provided proactively rather than reactively in response to customer requests (e.g. to rectify known faults, to provide new functionality)
2	Provide reactive technical advice and guidance to customers on a range of topics	2.1	Determine the purposes for which technical advice and guidance is required
		2.2	Verify that customers are entitled to receive the requested technical advice and guidance

		2.3	Communicate effectively with customers to elicit sufficient information to enable correct technical advice and guidance to be provided
		2.4	Source and interpret relevant technical information to produce advice and guidance in response to customer requests
		2.5	Communicate technical advice and guidance to customers in a format and style which meets their needs, confirming customer understanding of the information provided
		2.6	Follow organisational procedures for responding to customer requests including the timely escalation of those for which technical advice and guidance can not be provided or does not resolve the request
3	Provide proactive technical advice and guidance to customers	3.1	Identify the purposes for which the technical advice and guidance is required
		3.2	Identify the customers, and their level of technical knowledge, to whom the technical advice and guidance should be provided
		3.3	Develop technical advice and guidance in a format and style which takes into account the customers' level of technical knowledge
		3.4	Follow organisational procedures for providing proactive technical advice and guidance
Assessment requirements: NA			

Title:		Technical Advice and Guidance Y/500/7345	
Level:		4	
Credit value:		15	
Guided learning hours:		90	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Control the provision of technical advice and guidance	1.1	Ensure that organisational procedures for providing technical advice and guidance are followed: <ul style="list-style-type: none"> <li>• resolve problems</li> <li>• improve performance</li> </ul>
		1.2	Describe the types, sources and applicability of information which can form the basis of technical advice and guidance: <ul style="list-style-type: none"> <li>• information from reference sources (e.g. manuals, handbooks, manufacturer's specifications)</li> <li>• information derived from the analysis of data (e.g. trend analysis, fault logs)</li> <li>• online information (e.g. manufacturer's websites, technical fora, discussion groups)</li> </ul>
		1.3	Describe the procedures and constraints which can apply to the provision of technical advice and guidance (e.g. escalation, commercial/contractual, legal/regulatory, information security)
		1.4	Identify circumstances where technical advice and guidance should be provided proactively rather than reactively in response to customer requests (e.g. to rectify known faults, to provide new functionality)
2	Provide reactive technical advice and guidance to customers on a range of topics	2.1	Determine the purposes for which technical advice and guidance is required
		2.2	Verify that customers are entitled to receive the requested technical advice and guidance



		2.3	Communicate effectively with customers to elicit sufficient information to enable correct technical advice and guidance to be provided
		2.4	Source and interpret relevant technical information to produce advice and guidance in response to customer requests
		2.5	Communicate technical advice and guidance to customers in a format and style which meets their needs, confirming customer understanding of the information provided
		2.6	Follow organisational procedures for responding to customer requests including the timely escalation of those for which technical advice and guidance can not be provided or does not resolve the request
3	Provide proactive technical advice and guidance to customers	3.1	Identify the purposes for which the technical advice and guidance is required
		3.2	Identify the customers, and their level of technical knowledge, to whom the technical advice and guidance should be provided
		3.3	Develop technical advice and guidance in a format and style which takes into account the customers' level of technical knowledge
		3.4	Follow organisational procedures for providing proactive technical advice and guidance
Assessment requirements: NA			

Title:		Testing ICT Systems A/500/7354	
Level:		2	
Credit value:		9	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know technical information about a range of products, testing procedures and associated activities, equipment to be used and the reasons for the test	1.1	Describe the testing process to be followed: <ul style="list-style-type: none"> <li>• how to select tests and collect relevant and sufficient information for the test to be successful</li> <li>• how to minimise service disruption during testing and avoid detrimental effects or changes to performance</li> <li>• ways to configure tests</li> <li>• how to record, maintain or restore configurations, data and functionality</li> <li>• types of service level agreements</li> <li>• individual responsibility and authority</li> <li>• escalation procedures and risks associated with using a testing process</li> </ul>
		1.2	Describe the purposes of testing eg: <ul style="list-style-type: none"> <li>• aiding the diagnostic process</li> <li>• comparing actual and expected performance</li> </ul>

		1.3	<p>Describe relevant test preparation and conclusion activities, such as:</p> <ul style="list-style-type: none"> <li>• Health &amp; safety legislation and regulations</li> <li>• need to obtain work permissions</li> <li>• site access and security</li> <li>• system or equipment integrity (e.g. ensuring network service continuity)</li> <li>• data integrity (e.g. taking data backups before commencing work)</li> <li>• resource availability</li> <li>• level of service allowed by the SLA</li> <li>• environmental legislation and regulations (e.g. disposal of materials)</li> <li>• work sign-off and reporting</li> <li>• site restoration .system and equipment integrity (e.g. restoring service)</li> <li>• data integrity (e.g. restoring data backups as necessary)</li> </ul>
		1.4	Interpret technical information on a specified range of products
2	Carry out routine testing and assist in other testing	2.1	Ensure relevant preparation and conclusion activities have been carried out (see list above)
		2.2	<p>Use appropriate testing tools, such as:</p> <ul style="list-style-type: none"> <li>• electrical/electronic test instruments</li> <li>• on-board self-test programs</li> <li>• loopback devices</li> <li>• on-line/remote monitoring software</li> <li>• software debuggers</li> <li>• runtime analysers</li> <li>• diagnostic software</li> </ul>
		2.3	<p>Gather and record relevant test information and test results, including:</p> <ul style="list-style-type: none"> <li>• identifying the relevant information</li> <li>• using approved sources of information</li> <li>• validating information</li> </ul>
		2.4	<p>Respond to test information and results:</p> <ul style="list-style-type: none"> <li>• interpreting error codes/messages</li> <li>• comparing with specifications</li> <li>• identifying inconsistent data</li> </ul>
Assessment requirements: NA			

Title:		Testing ICT Systems F/500/7355	
Level:		3	
Credit value:		12	
Guided learning hours:		100	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Know technical information about a wide range of products, testing procedures and associated activities, equipment to be used and the reasons for the test	1.1	Describe the testing process to be followed <ul style="list-style-type: none"> <li>• how to select tests and collect relevant and sufficient information for the test to be successful</li> <li>• how to minimise service disruption during testing and avoid detrimental effects or changes to performance</li> <li>• ways to configure tests</li> <li>• how to record, maintain or restore configurations, data and functionality</li> <li>• types of service level agreements</li> <li>• individual responsibility and authority</li> <li>• escalation procedures and risks associated with using a testing process</li> <li>• information analysis (level 3)</li> </ul>
		1.2	Describe the purposes of testing <ul style="list-style-type: none"> <li>• aiding the diagnostic process</li> <li>• comparing actual and expected performance</li> <li>• testing performance</li> </ul>

		1.3	<p>Describe what test preparation and conclusion activities are necessary for specific tests, such as:</p> <ul style="list-style-type: none"> <li>• Health &amp; safety legislation and regulations</li> <li>• need to obtain work permissions</li> <li>• site access and security</li> <li>• system or equipment integrity (e.g. ensuring network service continuity)</li> <li>• data integrity (e.g. taking data backups before commencing work)</li> <li>• resource availability</li> <li>• level of service allowed by the SLA</li> <li>• environmental legislation and regulations (e.g. disposal of materials)</li> <li>• work sign-off and reporting</li> <li>• site restoration .system and equipment integrity (e.g. restoring service)</li> <li>• data integrity (e.g. restoring data backups as necessary)</li> </ul>
		1.4	Interpret detailed technical information on a specified range of products
2	Carry out testing and support others in the testing process	2.1	Provide technical advice to support testing
		2.2	Select any necessary preparation and conclusion activities and ensure that they have been completed
		2.3	<p>Select, adapt and use appropriate testing tools:</p> <ul style="list-style-type: none"> <li>• electrical/electronic test instruments</li> <li>• on-board self-test programs</li> <li>• loopback devices</li> <li>• on-line/remote monitoring software</li> <li>• software debuggers</li> <li>• runtime analysers</li> <li>• diagnostic software</li> </ul>
		2.4	<p>Gather, record and respond to test information and results by:</p> <ul style="list-style-type: none"> <li>• interpreting error codes/messages</li> <li>• comparing with specifications</li> <li>• identifying inconsistent data</li> <li>• examining results from multiple tests or trend analysis</li> <li>• using analytical tools to extract information from test data</li> </ul>
Assessment requirements: NA			

Title:		Configuring Windows Server 2008 Active Directory M/502/3650	
Level:		3	
Credit value:		13	
Guided learning hours:		90	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Configure Domain Name System (DNS) for Active Directory	1.1	Configure zones
		1.2	Configure DNS server settings
		1.3	Configure zone transfers and replication
2	Configure the Active Directory infrastructure	2.1	Configure a forest or a domain
		2.2	Configure trusts
		2.3	Configure Active Directory replication
		2.4	Configure sites
		2.5	Configure the global catalog
		2.6	Configure operations masters
3	Configure additional Active Directory server roles	3.1	Configure Active Directory Lightweight Directory Service (AD LDS)
		3.2	Configure Active Directory Rights Management Service (AD RMS)
		3.3	Configure the read-only domain controller (RODC)
		3.4	Configure Active Directory Federation Services (AD FS)
4	Create and maintain Active Directory objects	4.1	Automate creation of Active Directory accounts
		4.2	Maintain Active Directory accounts
		4.3	Create and apply Group Policy objects (GPOs)

		4.4	Configure GPO templates
		4.5	Configure software deployment GPOs
		4.6	Configure audit policy by using GPOs
		4.7	Configure account policies
5	Maintain the Active Directory environment	5.1	Configure backup and recovery
		5.2	Perform offline maintenance
		5.3	Monitor Active Directory
6	Configure Active Directory Certificate Services	6.1	Install Active Directory Certificate Services
		6.2	Configure CA server settings
		6.3	Manage certificate templates
		6.4	Manage enrolments
		6.5	Manage certificate revocations
Assessment requirements: NA			

Title:		Configuring Windows Server 2008 Network Infrastructure J/502/3640	
Level:		3	
Credit value:		11	
Guided learning hours:		90	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Configure IP Addressing and Services	1.1	Configure IPv4 and IPv6 addressing
		1.2	Configure Dynamic Host Configuration Protocol (DHCP)
		1.3	Configure routing
		1.4	Configure IPsec
2	Configure Name Resolution	2.1	Configure a Domain Name System (DNS) server
		2.2	Configure DNS zones
		2.3	Configure DNS records
		2.4	Configure DNS replication
		2.5	Configure name resolution for client computers
3	Configure Network Access	3.1	Configure remote access
		3.2	Configure Network Access Protection (NAP)
		3.3	Configure network authentication
		3.4	Configure wireless access
		3.5	Configure firewall settings.
4	Configuring File and Print Services	4.1	Configure a file server
		4.2	Configure Distributed File System (DFS)
		4.3	Configure shadow copy services
		4.4	Configure backup and restore
		4.5	Manage disk quotas



		4.6	Configure and monitor print services
5	Monitor and Manage a Network Infrastructure	5.1	Configure Windows Server Update Services (WSUS) server settings
		5.2	Capture performance data
		5.3	Monitor event logs
		5.4	Gather network data
Assessment requirements: NA			

Title:		Windows Server 2008, Server Administrator	
		J/502/3637	
Level:		3	
Credit value:		11	
Guided learning hours:		90	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Plan for Server Deployment	1.1	Plan server installations and upgrades
		1.2	Plan for automated server deployment.
		1.3	Plan infrastructure services server roles
		1.4	Plan application servers and services
		1.5	Plan file and print server roles
2	Plan for Server Management	2.1	Plan server management strategies.
		2.2	Plan for delegated administration
		2.3	Plan and implement group policy strategy
3	Monitor and Maintain Servers	3.1	Implement patch management strategy
		3.2	Monitor servers for performance evaluation and optimization.
		3.3	Monitor and maintain security and policies
4	Plan Application and Data Provisioning	4.1	Provision applications
		4.2	Provision data
5	Plan for Business Continuity and High Availability	5.1	Plan storage
		5.2	Plan high availability
		5.3	Plan for backup and recovery
Assessment requirements: NA			

Title:		MTA: Security Fundamentals A/602/6349	
Level:		2	
Credit value:		10	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understanding Security Layers	1.1	Understand core security principles
		1.2	Understand physical security
		1.3	Understand Internet security
		1.4	Understand wireless security
2	Understanding Operating System Security	2.1	Understand user authentication
		2.2	Understand permissions
		2.3	Understand password policies
		2.4	Understand audit policies
		2.5	Understand encryption
		2.6	Understand malware
3	Understanding Network Security	3.1	Understand dedicated firewalls
		3.2	Understand Network Access Protection (NAP)
		3.3	Understand network isolation
		3.4	Understand protocol security
4	Understanding Security Software	4.1	Understand client protection
		4.2	Understand e-mail protection
		4.3	Understand server protection
Assessment requirements: NA			

Title:		MTA: Microsoft .NET Fundamentals A/503/5249	
Level:		2	
Credit value:		10	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understanding .NET framework concepts	1.1	Understanding basic application settings
		1.2	Understand events and event handling in the .NET framework
		1.3	Understand structured exception handling in the .NET framework
2	Understand namespaces and classes in the .NET framework	2.1	Understand .NET class hierarchies
		2.2	Understand object oriented concepts in the .NET framework
		2.3	Understand .NET namespaces
		2.4	Understand and create class libraries
		2.5	Understand and use different data types in the .NET framework
		2.6	Understand generics
3	Understanding .NET code compilation	3.1	Understand the fundamentals of Microsoft Intermediate Language (MSIL) and Common Language Infrastructure (CLI)
		3.2	Understand the use of strong naming
		3.3	Understand version control
		3.4	Understand assemblies and metadata
4	Understanding I/O classes in the .NET framework	4.1	Understand .NET file classes
		4.2	Understand console I/O

		4.3	Understand XML classes in the .NET framework
5	Understanding security	5.1	Understand the system security namespace
		5.2	Understand authentication and authorisation
		5.3	Understand language interoperability
		5.4	Understand type safety
6	Understand memory management	6.1	Understand resource allocation
		6.2	Understand the difference between managed and unmanaged applications
Assessment requirements: NA			

Title:		MTA: Database Administration Fundamentals A/602/6352	
Level:		2	
Credit value:		10	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understanding Core Database Concepts	1.1	Understand how data is stored in tables
		1.2	Understand relational database concepts
		1.3	Understand data manipulation language (DML)
		1.4	Understand data definition language (DDL)
2	Creating Database Objects	2.1	Choose data types
		2.2	Understand tables and how to create them
		2.3	Create views
		2.4	Create stored procedures and functions
3	Manipulating Data	3.1	Select data
		3.2	Insert data
		3.3	Update data
		3.4	Delete data
4	Understanding Data Storage	4.1	Understand normalization
		4.2	Understand primary, foreign, and composite keys
		4.3	Understand indexes
5	Administering a Database	5.1	Understand database security concepts
		5.2	Understand database backups and restore
Assessment requirements: NA			

Title:		MTA: Web Development Fundamentals F/602/6353	
Level:		2	
Credit value:		10	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Programming Web Applications	1.1	Customize the layout and appearance of a Web page
		1.2	Understand ASP.NET intrinsic objects
		1.3	Understand state information in Web applications
		1.4	Understand events and control page flow
		1.5	Understand controls
		1.6	Understand configuration files
2	Working with Data and Services	2.1	Read and write XML data
		2.2	Distinguish between DataSet objects and DataReader objects
		2.3	Call a service from a Web page
		2.4	Understand DataSource controls
		2.5	Bind controls to data by using data-binding syntax
		2.6	Manage data connections and databases
3	Troubleshooting and Debugging Web Applications	3.1	Debug a Web application
		3.2	Handle Web application errors
4	Working with Client-Side Scripting	4.1	Understand client-side scripting
		4.2	Understand AJAX concepts
5	Configuring and Deploying Web Applications	5.1	Configure authentication and authorization
		5.2	Configure projects and solutions and reference assemblies

		5.3	Publish Web applications
		5.4	Understand application pools
Assessment requirements: NA			



Title:		MTA: Software Development Fundamentals M/602/6347	
Level:		2	
Credit value:		10	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understanding Core Programming	1.1	Understand computer storage and data types
		1.2	Understand computer decision structures
		1.3	Identify the appropriate method for handling repetition
		1.4	Understand error handling
2	Understanding Object-Oriented Programming	2.1	Understand the fundamentals of classes
		2.2	Understand inheritance
		2.3	Understand polymorphism
		2.4	Understand encapsulation
3	Understanding General Software Development	3.1	Understand application life cycle management
		3.2	Interpret application specifications
		3.3	Understand algorithms and data structures
4	Understanding Web Applications	4.1	Understand Web page development.
		4.2	Understand Microsoft ASP.NET Web application development
		4.3	Understand Web hosting.
		4.4	Understand Web services
5	Understanding Desktop Applications	5.1	Understand Windows® Forms applications
		5.2	Understand console-based applications
		5.3	Understand Windows Services

6	Understanding Databases	6.1	Understand relational database management systems
		6.2	Understand database query methods
		6.3	Understand database connection methods
Assessment requirements: NA			

Title:		MTA: Windows Development Fundamentals T/602/6348	
Level:		2	
Credit value:		10	
Guided learning hours:		80	
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understanding Windows Programming Basics	1.1	Identify Windows application types
		1.2	Implement user interface design
		1.3	Create Windows-based applications by using Visual Studio
2	Creating Windows Forms Applications	2.1	Create and handle events
		2.2	Understand Windows Forms inheritance
		2.3	Understand how to create new controls and extend existing controls
		2.4	Validate and implement user input
		2.5	Debug a Windows-based application
3	Creating Windows Services Applications	3.1	Create a Windows Services application
		3.2	Install a Windows Services application
4	Accessing Data in a Windows Forms Application	4.1	Understand data access methods for a Windows Application
		4.2	Understand databound controls
5	Deploying a Windows Application	5.1	Understand Windows application deployment methods
		5.2	Create Windows setup and deployment projects
Assessment requirements: NA			