

Level 5 Diploma in Computing

Objective of the qualification:

- It should available to everyone who is capable of reaching the required standards
- It should be free from any barriers that restrict access and progression
- It should give equal opportunities for all those wishing to access the qualifications.

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Entry Requirements

This qualification is designed for learners who are typically aged 18 and above.

For learners who have recently been in education or training the entry profile is likely to include:

- prior study in computing or related subjects at level 4 or above a level 4 qualification for example an Level 4 Diploma in Computing
- other equivalent international qualifications

or

Relevant work experience at managerial level

Learners must also have an appropriate standard of English to enable them to access relevant resources and complete the unit assignments.

Introduction to Level 5 Diploma in Computing

Our new qualification in Computing at Level 5 has been developed to conform to the requirements of the RQF, to meet the requirements of the sector.

This qualification provides the core knowledge, understanding and skills to support learners planning to further their studies in computing. It is equivalent to the second year of a degree programme in Computing. Learner may also progress from this qualification to employment in the sector.

Progression

On successful completion of a Level 5 qualification in Computing there are a number of progression opportunities.

Learners may progress to:

- employment in a computing and/or technology role at an appropriate level
- the final year of a degree programme

Level 5 Diploma in Computing

The Level 5 Diploma in Computing is a 120 credit qualification. Learners must complete all the mandatory units totalling 120 credits.

| Unit Title | Level | Credit | GLH |
|--|-------|--------|-----|
| Mandatory units | | | |
| Cyber Security | 5 | 12 | 48 |
| Database Design and Development | 5 | 12 | 48 |
| Web Based Development | 5 | 12 | 48 |
| Network Design | 5 | 12 | 48 |
| Ethical, Legal and Regulatory Issues and Professional Responsibilities in IT | 5 | 12 | 48 |
| Strategic Management Information Systems | 5 | 12 | 48 |
| Innovative Technologies in Computing | 5 | 12 | 48 |
| Computing Research Methods | 5 | 12 | 48 |
| Managing a Computing Project | 5 | 12 | 48 |
| Software Development Methodologies | 5 | 12 | 48 |

Unit Specifications

Unit Format

Each unit is presented in a standard format. This format provides guidance on the requirements of the unit for learners, tutors, assessors and external verifiers.

Each unit has the following sections:

Unit Title

The unit title reflects the content of the unit. The title of each unit completed will appear on a learner's statement of results.

Unit Aims

The unit aims section summarises the content of the unit.

Unit Code

Each unit is assigned a RQF unit code that appears with the unit title on the Register of Regulated Qualifications.

RQF Level

All units and qualifications in the RQF have a level assigned to them which represents the level of achievement. The level of each unit is informed by the RQF level descriptors.

Credit value

The credit value is the number of credits that may be awarded to a learner for the successful achievement of the learning outcomes of a unit.

Learning Outcomes

The learning outcomes set out what a learner is expected to know, understand or be able to do as the result of the learning process.

Assessment Criteria

The assessment criteria describe the requirements a learner is expected to meet in order to demonstrate that the learning outcome has been achieved. Command verbs reflect the level of the qualification e.g. at level 5 you would see words such as analyse and evaluate

Unit Indicative Content

The unit indicative content section provides details of the range of subject material for the programme of learning for the unit

| Cyber Security | | | |
|--|---|---|--|
| Unit Aims | Learners will develop an understanding of the importance of | | |
| | cyber security to organisations. They will understand industry | | |
| | standards of cyber security and be able to recommend improvements in security to a client's network. | | |
| Unit Level | 5 | in security to a cherics network. | |
| Guided Learning Hours | 48 | | |
| Credit Value | 12 | | |
| Unit Grading Structure | Pass | | |
| Assessment Guidance | To achieve thi | is unit, learners must achieve the learning | |
| | outcomes and | I meet the standards specified by the assessment | |
| | | s unit. Additional guidance is provided on the ATHE | |
| | | nment brief. Learners must base some of the work | |
| | | organisation and on a network which has | |
| | | . This must be agreed with the tutor as the learner | |
| | vulnerabilities | nission to test the system to reveal these | |
| Learning Outcomes – The | | Assessment Criteria – The learner can: | |
| 1. Understand the impact of | | 1.1 Analyse current cyber security risks to | |
| security threats to organisati | | organisations | |
| , s | | 1.2 Critically assess the vulnerability of computer | |
| | | network security in a chosen organisation | |
| | | 1.3 Evaluate the impact of cyber security on a | |
| | | chosen organisation | |
| | Indicative Content | | |
| vulnerabilities. | Cyber security risks: authentication, educating staff, software and hardware vulnerabilities. | | |
| Network vulnerabilities: network vulnerability analysis, network exposures, conducting network vulnerability scans, vulnerability verification and reporting | | | |
| Impact of cyber security: network security concepts, network security threats, security attacks | | | |
| 2. Understand industry stand | dards of cyber | 2.1 Evaluate different controls to manage cyber | |
| security | | security risks | |
| | | 2.2 Critically evaluate cyber security strategies | |
| | | within an organisation against industry | |
| Indicative Content standards | | | |
| | romont: ovbor r | ick management reducing suber ricks information | |
| Cyber security management: cyber risk management, reducing cyber risks, information risk management regimes | | | |
| Cyber security strategies: identifying security objectives, assessing network security threats, dealing with security challenges, tackling cyber crime | | | |
| 3. Be able to recommend im | | 3.1 Determine possible improvements to a | |
| to secure a network for a clie | ent against | client's secure network | |
| cyber attacks | | 3.2 Develop network security training plan for a | |
| Indicative Content | | | |
| | over enter net | upul, monitoring populity controls in the set | |
| Network security improvements: network monitoring, security controls, network | | | |

- Network security improvements: network monitoring, security controls, network boundaries, security configuration, user privileges, incident handling
- Training in network security: user awareness, network security training, prevention mechanisms

| Database Design and Deve | elopment | | | |
|--|--|--|--|--|
| Unit Aims | Learners will | extend their understanding of database design and | | |
| | development. They will research database management | | | |
| | | systems and will design and implement a complex database. | | |
| Unit Level | 5 | | | |
| Guided Learning Hours | 48 | | | |
| Credit Value | 12 | | | |
| Unit Grading Structure | Pass | | | |
| Assessment Guidance | | is unit, learners must achieve the learning | | |
| | | meet the standards specified by the assessment | | |
| | | s unit. Additional guidance is provided on the ATHE | | |
| | | nment brief. Learners will design a relational | | |
| | | ne with the client brief and they will need to advanced database skills during the | | |
| | implementation | | | |
| Learning Outcomes – The | | Assessment Criteria – The learner can: | | |
| Understand database ma | | 1.1 Evaluate the role of databases within | | |
| systems | inagement | organisations | | |
| oyotomo | | 1.2 Critically evaluate the database design | | |
| | | process for a complex database | | |
| | | 1.3 Explain techniques that can be used to | | |
| | | connect databases to other applications | | |
| | | 1.4 Recommend a database management | | |
| | | system to design a complex database | | |
| Indicative Content | | | | |
| Developing databases sets, forms and repo | | ns: organisational structures, data elements, data | | |
| Database design: entities, relationship | | os, attributes, keys, data types, normalisation | | |
| Database connectivity: connecting data | | tabases to applications, relational database | | |
| connectivity, ODBC, J | DBC | | | |
| Database management | systems: | | | |
| 2. Be able to design a relational database | | 2.1 Plan the design of a complex relational | | |
| in line with a client brief | | database in response to a client brief | | |
| | | 2.2 Design a complex relational database in | | |
| | | response to a client brief | | |
| | | 2.3 Normalise data to 3rd normal form | | |
| Indicative Content | | | | |
| Planning relational d dictionary, decomposition | | database requirements, ERD, DFD, data I dependencies | | |
| Database design: Designing database table, Creating database indexes and constraints, Designing SQL queries, forms, macros, security | | | | |
| _ | • | • | | |
| constraints, Designir Normalisation: Identi | ng SQL queries, fying insufficien | • | | |
| constraints, Designir Normalisation: Identi 2NF and 3NF, De-no 3. Be able to implement a constraints | ng SQL queries, fying insufficien ormalisation | forms, macros, security cy of normal forms, Comparing normal forms, 1NF, 3.1 Construct a complex database to meet a | | |
| constraints, DesignirNormalisation: Identi 2NF and 3NF, De-no | ng SQL queries, fying insufficien ormalisation | forms, macros, security cy of normal forms, Comparing normal forms, 1NF, 3.1 Construct a complex database to meet a design brief 3.2 Implement database design features to meet | | |
| constraints, Designir Normalisation: Identi 2NF and 3NF, De-no 3. Be able to implement a constraints | ng SQL queries, fying insufficien ormalisation | forms, macros, security cy of normal forms, Comparing normal forms, 1NF, 3.1 Construct a complex database to meet a design brief | | |

Database construction: advanced SQL queries, user actions

- Implementing database features: database security features, database links (LAMP, WAMP), graphical user interfaces (GUI)
- Database testing: testing plans, database components, extreme data, error handling
- 4. Be able to review the process of design and implementation of a database
- 4.1 Critically evaluate design documentation identifying improvements where appropriate
- 4.2 Review the database implementation process to establish lessons learned

Indicative Content

- Database documentation: database architecture, database documentation components
- Database development review: design review, code inspection, security inspection, post implementation review

| Web Based Development | | | |
|---|--|--|--|
| Unit Aims | Learners will develop an understanding of web based development They will research different technologies that can be used to create dynamic and interactive websites and they will use this research to develop their own website. They will investigate e-marketing and SEO techniques to promote web sites and they will suggest appropriate techniques to solve a business problem. Learners will create a back end database to allow the database to interact with the website. They will critically review the web-based solution against client | | |
| Unit Level | requirements. | | |
| Guided Learning Hours | 48 | | |
| Credit Value | 12 | | |
| | Pass | | |
| Unit Grading Structure Assessment Guidance | | is unit, learners must achieve the learning | |
| Assessment Guidance | outcomes and criteria for the | I meet the standards specified by the assessment unit. Additional assessment guidance is provided sample assignment brief. | |
| Learning Outcomes – The | learner will: | Assessment Criteria – The learner can: | |
| Understand client side and server side technologies | | 1.1 Critically compare client side and server side technologies 1.2 Evaluate the effectiveness of different web services to meet a client brief 1.3 Evaluate different dynamic and interactive web applications | |
| Indicative Content | | | |
| explained, server side • Web services: introduce | e development tion to web ser sites developm | ver architecture, client side development explained vices, data exchange, WSDL, SOAP, RDF, XML ent, database design, three-tiered architecture, 2.1 Critically evaluate e-marketing techniques to promote business online 2.2 Critically review legal, ethical and social issues related to e-marketing | |
| Indicative Content | | S | |
| E-marketing techniques: e-marketing strategies, e-marketing channels, social media, SEO Issues relating to e-marketing deployment: legislation, ethics, social acceptance | | | |
| 3. Be able to create a web-b to a business problem | ased solution | 3.1 Construct a web-based solution to a business problem 3.2 Integrate e-marketing techniques into the web-based solution 3.3 Create a backend database to interact with the web-based solution 3.4 Integrate multimedia techniques in the web-based solution 3.5 Integrate web services in the web-based solution | |

- Web based solutions: web page development, web interface design, accessibility issues, usability issues
- E-marketing development: identifying suitable SEO strategies, SEO techniques, emarketing techniques and tools
- Back-end design: server side development, WAMP, PHP, SQL
- Multimedia techniques: integrating multimedia to web interfaces, multimedia techniques (e.g. virtual light box, wow slider)
- Web services: web service specification, publishing web services, using web services
- 4. Be able to review a web-based solution 4.1 Evaluate client side and server side
 - technologies implemented, against agreed success criteria
 - 4.2 Justify the e-marketing SEO techniques chosen for the web-based solution
 - 4.4 Propose improvements to a web-based solution

Indicative Content

- Review implemented technologies and their appropriateness to solve business problem: Server side versus client side development, Explaining the importance of layered architectures for web development
- Evaluate: Evaluating web services, Mapping web services to user needs, The role
 of web services in web application development
- Justify: Reviewing SEO practices, Success criteria for SEO techniques, Assessing SEO practices and their suitability for specific web applications
- Reflect –Web application development methods, Web application deployment,
 Web application maintenance, Skills for web application development

| Network Design | | | |
|---|-------------------|--|--|
| Unit Aims | I Learners will I | learn IT network design fundamentals and will | |
| | | ork for a client in accordance with a design brief. | |
| Unit Level | 5 | Tork for a client in accordance with a design blief. | |
| | | | |
| Guided Learning Hours | 48 | | |
| Credit Value | 12 | | |
| Unit Grading Structure | Pass | | |
| Assessment Guidance | | is unit, learners must achieve the learning | |
| | | d meet the standards specified by the assessment | |
| | | unit. Additional assessment guidance is provided | |
| | on the ATHE | sample assignment brief. | |
| Learning Outcomes – The | learner will: | Assessment Criteria – The learner can: | |
| 1. Understand networking fu | ındamentals | 1.1 Critically evaluate rules of network protocols | |
| _ | | 1.2 Evaluate the hardware and software needed | |
| | | to run an IT network successfully | |
| | | 1.3 Assess common methods of managing | |
| | | mobile devices on wireless networks | |
| | | 1.4 Analyse the tools available to manage a | |
| | | network | |
| Indicative Content | | 1.00.00 | |
| | e role of a netw | vork protocol, protocol types, network protocol | |
| examples | c role of a field | vork protocor, protocor types, network protocor | |
| • | d coftware: not | tworking devices networking applications network | |
| | u sonware. Het | working devices, networking applications, network | |
| operating systems | | | |
| | ireiess network | types, wireless network devices, uses of wireless | |
| networks | | | |
| Network management: network monitoring, device management, network management | | | |
| systems | | | |
| 2. Be able to design an IT n | | 2.1 Analyse business needs to design a network | |
| accordance with a design be | rief | 2.2 Critically evaluate possible solutions to meet | |
| | | a design brief | |
| | | 2.3 Design a structured network to meet a design | |
| | | brief | |
| | | 2.4 Develop viable alternative solutions to meet a | |
| | | design brief | |
| Indicative Content | | | |
| Network requirements: bandwidth, availability, application connectivity | | | |
| Networking evaluation: evaluation methodologies, assessing network objectives, | | | |
| evaluation results | | | |
| Network design: topology, forecasting networking needs, network traffic | | | |
| Network design: topology, forecasting networking needs, network traine Networking solutions: client devices, access points, network unification, network | | | |
| management | | | |
| 3. Be able to build a network | , to most o | 3.1 Build a network to meet a client brief | |
| | | 5. I Build a Helwork to Hieel a Client brief | |
| client hrief | t to meet a | 3.2 Test network against the requirements of the | |
| client brief | c to meet a | 3.2 Test network against the requirements of the | |
| client brief | c to meet a | client brief | |
| client brief | c to meet a | client brief 3.3 Evaluate performance issues of built network | |
| client brief | c to meet a | client brief 3.3 Evaluate performance issues of built network against client brief | |
| client brief | c to meet a | client brief 3.3 Evaluate performance issues of built network against client brief 3.4 Recommend security requirements to keep a | |
| client brief | c to meet a | client brief 3.3 Evaluate performance issues of built network against client brief | |

- Network architecture: types of networks, topologies, physical infrastructure
- Network testing: identifying testing objectives, testing criteria, testing results
- Network performance: selecting performance criteria, measuring network performance
- Network security: network auditing, dealing with network threats, security measures, security policy

| Ethical, Legal and Regulatory Issues and Professional Responsibilities in IT | | | | |
|--|--|---|--|--|
| Unit Aims | Learners will | deve | lop understanding of ethical, legal, regulatory | |
| | issues and pr | ofess | sional responsibilities relating to working in IT. | |
| Unit Level | 5 | | | |
| Guided Learning Hours | 48 | | | |
| Credit Value | 12 | | | |
| Unit Grading Structure | Pass | | | |
| Assessment Guidance | | | it, learners must achieve the learning | |
| | outcomes and | d me | et the standards specified by the assessment | |
| | criteria for the | criteria for the unit. Additional assessment guidance is provided | | |
| | on the ATHE sample assignment brief. | | | |
| Learning Outcomes – The | learner will: Assessment Criteria – The learner can: | | | |
| 1. Understand ethical issues | in IT | 1.1 | Critically evaluate current ethical issues in IT | |
| | | 1.2 | Critically review development of ethical | |
| | | | practices in IT | |
| | | 1.3 | Explain ethical issues relating to data mining | |
| | | 1.4 | Assess the importance of ethical guidelines | |
| | | | in IT | |
| | | 1.5 | Evaluate the impact of current ethical issues | |
| | | | on an organisation | |

- Ethics and IT: ethics explained, codes of conduct, corporate credo
- Ethical practices: confidentiality, integrity, relationships
- Ethical data mining: data marketing, data gathering techniques, manipulating personal data
- Ethical good practice: IT role responsibilities, responsibilities against others, responsibilities against the society
- Ethics in organisations: privacy, accuracy, security

| Understand legal and regulatory | 2.1 Evaluate current legal and regulatory issues |
|---|--|
| issues relating to the use of IT in | relating to the use of IT in organisations |
| organisations | 2.2 Evaluate the impact of a legal or regulatory |
| | issue in IT on an organisation |
| | 2.3 Explain a contracting process relating to IT |
| | development |
| | 2.4 Assess the impact of legislation in human |
| | computer interaction |

Indicative Content

- Legal issues in IT: legislation overview, IT specific legislation
- Regulatory issues in IT: standards and regulations, policies (access control, electronic messaging, monitoring, remote access, server security)
- IT contracts: employment contracts, development agreements, confidentiality agreements, collaborative agreements, Intellectual Property
- Impact of legislation in HCI design: functionality, usability, reliability, efficiency, maintainability, portability

| Understand professional | 3.1 Explain the standards that apply to working |
|--|---|
| responsibilities relating to working in IT | as a Professional within the IT industry |
| | 3.2 Assess self against professional knowledge, |
| | skills and competence required to work as a |
| | Professional in the IT industry |
| | 3.3 Plan how to address any areas requiring |
| | development in order to achieve professional |
| | competence |

- IT professional standards: ITPS disciplines
- Competencies required for IT professionals: technology awareness, management, communication
- Skills required for IT professionals: analytical, design, development

| Strategic Management Information Systems | | | |
|---|---|--|--|
| Unit Aims | Learners will develop an understanding of the importance of | | |
| | integrating org | ganisational strategy with information systems and | |
| | the tools and | techniques that can be used to analyse strategy. | |
| | They will anal | yse business processes and recommend | |
| | improvements |). | |
| Unit Level | 5 | | |
| Guided Learning Hours | 48 | | |
| Credit Value | 12 | | |
| Unit Grading Structure | Pass | | |
| Assessment Guidance | To achieve th | is unit, learners must achieve the learning | |
| | outcomes and | I meet the standards specified by the assessment | |
| | criteria for the | unit. Additional assessment guidance is provided | |
| | on the ATHE sample assignment brief. | | |
| Learning Outcomes – The learner will: Assessment Criteria – The learner can: | | Assessment Criteria – The learner can: | |
| 1. Understand links between | n information | 1.1 Explain the links between information | |
| systems and organisational | strategy | systems and organisational strategy | |
| | | 1.2 Evaluate tools that can be used to analyse | |
| | | organisational strategy | |
| | | 1.3 Evaluate frameworks for integrating | |
| | | information systems with organisational | |
| | | strategy | |
| | | 1.4 Analyse the benefits to organisations of | |
| | | integrating information systems and | |
| | | organisational strategy | |
| Indicative Content | | | |
| | | | |

- Information Systems explained: data versus information, information needs, system functionality
- Organisational strategy: structure, capabilities, corporate culture, performance criteria, operations
- Integrating IS: strategy support, data processing, decision support, communication support, resource management
- The role of IS in organisations: market awareness, organisational responsiveness, supply chain management
- 2. Be able to analyse the links between strategy and information systems within an organisation
 2.1 Evaluate an organisation's strategy using strategic management tools and techniques
 2.2 Assess the extent to which information systems are integrated with a chosen organisation's strategy

- Strategic management tools and techniques Porter's forces, BCG matrix, SWOT analysis, Marketing mix, Ansoff matrix, PESTLE analysis, Maslow's hierarchy, 7S method
- IS integration understanding legacy systems, vertical integration, horizontal integration, star integration

| 3. Be able to formulate an information | 3.1 | Recommend information systems options |
|--|-----|---|
| systems strategy for an organisation | | based on analysis of an organisation's |
| | | strategy |
| | 3.2 | Formulate an information systems strategy for |
| | | an organisation in line with the organisation's |
| | | strategy |

- IS organisational needs planning organisational level analysis, job analysis, task analysis, needs analysis
- IS strategy scope, planning, identifying IT needs, decision making, implementing the strategy
- 4. Be able to plan the implementation of an information systems strategy
 4.1 Plan the implementation of an information systems strategy, considering benefits, costs, risks and priorities
 4.2 Evaluate the risks based on planned implementation of an information systems strategy

Indicative Content

- IT strategy implementation stakeholder analysis, mapping current situation, justifying decisions, scheduling the implementation, developing an IT policy
- IT risks financial, technical, information related, user related, corporate culture

| Innovative Technologies in Computing | | | |
|---|---|--|--|
| Unit Aims | | develop an understanding of innovative | |
| | developments in technology and their impact on the computer | | |
| | industry. | | |
| Unit Level | 5 | | |
| Guided Learning Hours | 48 | | |
| Credit Value | 12 | | |
| Unit Grading Structure | Pass | | |
| Assessment Guidance | To achieve th | is unit, learners must achieve the learning | |
| | | I meet the standards specified by the assessment | |
| | | s unit. Additional guidance is provided on the ATHE | |
| | | nment brief. Learners will approach this unit from a | |
| | | rspective but examples from organisations and | |
| | | cation in computing techniques will be required to | |
| | | work. This is particularly the case for activities 2, 4 | |
| | | he learner will need to apply their computing skills | |
| Lagraina Outoemes The | | cal perspectives of this unit. Assessment Criteria – The learner can: | |
| Learning Outcomes – The 1. Understand innovative de | | 1.1 Evaluate the environments that utilise | |
| in technology | veiopinents | innovative technologies and identify current | |
| in technology | | developments in the field | |
| | | 1.2 Analyse the impact of innovations in | |
| | | technology on society | |
| | | 1.3 Evaluate successes and failures of | |
| | | innovations in technology | |
| | | 1.4 Assess the dependency of environments on | |
| | | future developments in innovative | |
| | | technologies | |
| Indicative Content | | | |
| Innovative technologies – current developments: big data exploration, cloud system | | | |
| deployment, Ubiquitous computing | | | |
| Technology innovation and society: knowledge society, social media, technology | | | |
| enhanced innovation processes | | | |
| Evaluating technology innovation: methods for evaluating innovation, technology | | | |
| • | evaluation, impact of technology innovation (success and failure) | | |
| Dependencies between technology and its environment: technology and environment, technology sustainability, sustainable development | | | |
| Understand impacts of technological Z.1 Explain impacts of technological innovation | | | |
| innovations on the computer | | on the way computer systems are used | |
| | · | 2.2 Evaluate ethical issues relating to | |
| | | technological innovation in computing | |
| | | 2.3 Evaluate the impact of legislation on | |
| | | technological innovation in computing | |
| Indicative Content | | | |
| Technological innovation and ethics: new ethical dilemmas, privacy, security | | | |
| Technological innovation and legislation: IPR, patents, copyright | | | |

| Computing Describ Moth | , a d a | | | |
|--|--|---|--|--|
| Computing Research Meth | | | | |
| Unit Aims | Learners will develop an understanding of different computer | | | |
| | | ch methods. They will plan their own research and | | |
| | | search project based on an area of interest to them | | |
| | within comput | ter science. | | |
| Unit Level | 5 | | | |
| Guided Learning Hours | 48 | | | |
| Credit Value | 12 | | | |
| Unit Grading Structure | Pass | | | |
| Assessment Guidance | | is unit, learners must achieve the learning | | |
| | | d meet the standards specified by the assessment | | |
| | | e unit. Additional assessment guidance is provided | | |
| | | sample assignment brief. | | |
| Learning Outcomes – The | | Assessment Criteria – The learner can: | | |
| Understand computer based research | | 1.1 Analyse computer based research | | |
| techniques | | techniques | | |
| | | 1.2 Evaluate different sampling techniques | | |
| | | commonly used in computer based research | | |
| | | projects | | |
| | | 1.3 Assess ethical issues in using computer | | |
| | | based research techniques | | |
| | | 1.4 Evaluate common data analysis tools and | | |
| | | techniques | | |
| Indicative Content | | | | |
| Research techniques: desk research, ethnography, focus groups, interviews, online | | | | |
| communities, mobile research, surveys | | | | |
| Sampling techniques: probability-based, selective, convenience-based, ethnographic methods | | | | |
| Ethics and research: ethical standards, ethics principles, ethics approval | | | | |
| Data analysis techniques: qualitative methods, quantitative methods, data analysis | | | | |
| tools | | | | |
| 2. Be able to plan a computer based 2.1 Develop a research proposal for a computer | | | | |
| research project on a topic within | | based research project on a topic within | | |
| computer science | | computer science | | |
| | | 2.2 Plan the data collection for a computer-based | | |
| | | research project | | |
| | | 2.3 Review the feasibility of a research proposal | | |
| | | for a computer-based research project | | |
| Indicative Content | | | | |

- Research proposal structure: focus, relevant literature, method, ethics, decisions, schedule, resources, references
- Data collection methods: exploratory, descriptive, analytical/explanatory, predictive
- Research proposal feasibility: scope, topic selection, structure, managing time, managing data collection

3. Be able to carry out research on a topic within computer science

- 3.1 Collect data for a computer based research project using appropriate techniques
- 3.2 Analyse data for a computer based research project using appropriate tools and techniques
- 3.3 Report findings of a computer based research project in line with research aims and preferred format for the intended audience

Indicative Content

- Data collection: primary data, secondary data
- Data analysis: scientific rigor, deductive, inductive
- Reporting: research outline, research foundation, research methodology, research results, research evaluation, research process reflection

| Managing a computing project | | | |
|---|---|---|--|
| Unit Aims | Learners will f and technique project. They | ind out about different project management tools as that can be used when managing a computing will use tools and techniques to plan, implement eir own computing project. | |
| Unit Level | 5 | | |
| Guided Learning Hours | 48 | | |
| Credit Value | 12 | | |
| Unit Grading Structure | Pass | | |
| Assessment Guidance | To achieve this unit, learners must achieve the learning outcomes and meet the standards specified by the assessment criteria for the unit. Additional assessment guidance is provided on the ATHE sample assignment brief. | | |
| Learning Outcomes – The | | Assessment Criteria – The learner can: | |
| Understand how to manage a computing project | | 1.1 Analyse methods for planning a computing project 1.2 Explain the roles and responsibilities within a project team 1.3 Critically evaluate project management tools and techniques that can be used when managing a computing project 1.4 Explain how to manage quality issues affecting computing projects | |
| Indicative Content | | and a migrature of projects | |
| Project planning methods: project specification, project plan structure, performance criteria Project team structure: project roles, team structure, managing and motivating members Project management tools: Brainstorming, Fishbone Diagrams, Critical Path Analysis Flow Diagrams, Gantt Charts Project quality explained: defining quality, quality characteristics, quality assurance, quality control | | | |
| 2. Be able to manage a com | nputing project | 2.1 Follow a project plan to implement a | |
| | | computing project 2.2 Manage risks and issues in a computing project according to agreed procedures 2.3 Report on the progress of a computing project to appropriate stakeholders using agreed communication methods | |
| Indicative Content | | | |
| Project plan structure: work breakdown structure, logic network Managing project risks: understanding risks, risk factors, risk assessment risk management strategies Monitoring project progress: measuring progress, schedule plans, dealing with problems, PRINCE2 | | | |
| 3. Be able review a computi | ng project | 3.1 Review computing project against agreed success criteria3.2 Recommend improvements to any future computing project | |
| mulcative Content | | | |

- Project evaluation: evaluation plan, interpreting data, communicating results
- Post completion report: deliverable assessment, maintenance needs, project impact

Software development methodologies

| · | | | |
|---|------------------|--|--|
| Unit Aims | Learners will | learn about using software development | |
| | methodologie | s to develop an information system. | |
| Unit Level | 5 | | |
| Guided Learning Hours | 48 | | |
| Credit Value | 12 | | |
| Unit Grading Structure | Pass | | |
| Assessment Guidance | outcomes and | is unit, learners must achieve the learning d meet the standards specified by the assessment | |
| | criteria for the | e unit. Additional assessment guidance is provided | |
| | on the ATHE | sample assignment brief. | |
| Learning Outcomes – The learner will: | | Assessment Criteria – The learner can: | |
| Understand the role of methodologies | | 1.1 Explain the differences between systems | |
| in software development | | software and application software | |
| | | 1.2 Evaluate software development methodologies | |
| | | 1.3 Explain the phases of software development | |
| Indicative Content | | | |
| Systems lifecycle: information systems development, the lifecycle approach, | | | |

- software development lifecycle
- Approaches in software development: data, processes, people, organisations, project management techniques
- · Software development methods: process oriented, object oriented, rapid development, people oriented, organisational oriented

| 2. Be able to design an information | 2.1 Select a software development methodology |
|-------------------------------------|---|
| system using a software development | to use when designing an information system |
| methodology | and justify the selection |
| | 2.2 Use selected software development |
| | methodology to design an information system |
| | 2.3 Evaluate the chosen selected software |
| | development methodology |

Indicative Content

- Methodology selection: heavy versus lightweight, waterfall, RUP, Spiral models • Agile methods: Scrum, Extreme Programming
- Evaluating methodologies: identifying evaluation criteria, frameworks for methodology evaluation