

## Qualification Requirement for the BTEC Higher Nationals in Computing

This Qualification Requirement should be read in conjunction with overarching guidance from Edexcel.

### Rationale

BTEC Higher Nationals using the title Computing should be developed to focus on:

- the education and training of computing technologists who are employed or wish to be employed in a wide variety of types of computing roles, such as in: , business systems developer, network administrator and software developer, or in a technical support role in industry, the public or education sectors.
- providing learning opportunities for computing technologists in current employment to achieve a nationally recognised level four vocationally specific qualification
- providing opportunities for full-time learners to gain a nationally recognised vocationally specific qualification to enter employment as an computing technologist or progress to higher education vocational qualifications such as a degree in Computing or related area
- developing the knowledge, understanding and skills of learners from an computing technologist's viewpoint
- the role of the computing technologist and their relationship within the section/department in which they work. How their role and that of their department/section fits within the overall structure of their organisation and within the technical and local community.
- providing opportunities for learners to focus on the development of the higher level skills within a technological context
- providing opportunities for learners to develop a range of skills and techniques and attributes essential for successful performance in working life.

### Aims of the Qualification

Qualifications in Computing should meet the needs of the above rationale by:

- equipping individuals with applied knowledge, understanding and skills for success in employment in the computing industry
- enabling progression to an undergraduate degree or further professional qualification in Computing or related areas
- providing specialist studies relevant to individual vocations and professions in which students are working or intend to seek employment in the IT and computing sectors and their related industries
- developing the learners ability in through effective use and combination of the knowledge and skills gained
- developing a range of skills and techniques, personal qualities and attributes essential for successful performance in working life and thereby enable learners to make an immediate contribution to employment
- providing flexibility, knowledge, skills and motivation as a basis for future studies and career development - an educational foundation for a range of careers in the IT, computing and related industries

## Mandatory Curriculum

**Computer Systems:** Evaluate computer system performance, employ operating systems, upgrade a computer system, participate in planning a network installation.

**Systems Analysis:** Understand the systems analysis life cycle, Use systems analysis tools and techniques, perform a system investigation, investigate functional and data modelling.

**Introduction to Programming:** Design and develop code using structured programming methods, Use modularisation appropriate to the chosen programming language, Produce appropriate documentation for a given program application, Create and apply appropriate test schedules.

**Introduction to Database Design:** Understand database environments, use and manipulate appropriate database software, design a simple database, demonstrate the database.

**Introduction to Networking:** Evaluate the benefit of networks, apply architectural concepts to the design/evaluation of networks, Install network software, and perform network management responsibilities.

**Professional Development:** Demonstrate and deliver a range of transferable skills, show evidence of working and contributing to a group situation, Identify a given problem and provide feasible solutions, monitor and review own learning experience

**Using number:** (contextualised for each pathway), **Financial Modelling:** Analyse the functioning of an organisation's financial systems, evaluate the effectiveness of management control systems; **Mathematics for Software Development:** Develop the mathematical skills necessary for software engineering, gain an understanding of linear algebra, apply the fundamentals of formal methods, use statistical techniques to analyse data

**Project:** Demonstrate an understanding of how to plan a project, provide evidence of the design of the framework for the project, document the phases of the project, deliver and evaluate the project.

**Quality Assurance and Control:** understand the principles and practices, costs and benefits of quality systems, TQM, performance indicators, applications of quality systems and how they are applied within a chemical industry environment

## Optional Curriculum

**Business Information Systems pathway:** the optional units for this pathway focus on the skills and knowledge that would be expected from a student following this particular route. This would include an understanding of management information systems, database design, multimedia and e-business strategy. The pathway attempts to allow the learner to understand how IT systems are designed and implemented and the physical and financial constraints

**Networking Pathway:** this pathway will allow students to investigate in depth the range of network software and hardware available and be able to install, test and implement a networked system. The Diploma allows the student to explore the wider implications of networks including the connection with business and e-business systems.

Qualification Requirement for the BTEC HNs in Computing

Version 1

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**Software Development pathway:** develops and applies the knowledge and understanding of the methods available in software development; design methodology, programming techniques and theoretical models together with industry-standard implementation and testing methods.

**Wider computing:** (available in all pathways and especially at Diploma level) develops and applies the knowledge and understanding of the connections between specialist areas and their wider implications; this allows students to explore networking, for example, within the context of e-business or to explore in greater depth networking.

### **Professional Body Recognition**

Students possessing an HNC/D in Computing and a number of years (usually between 3 – 5 years) of post HNC/D experience in the IT or computing industry are able to apply for 'Associate Membership of the British Computer Society'.

### **Links to National Standards**

There is the opportunity for HNC/D programmes in Computing to provide some of the underpinning knowledge, understanding and skills for the Level 4 NVQs in Developing IT Systems and Managing IT Systems.

### **Higher Level Skills and Abilities**

Learners will be expected to develop the following skills during the programme of study:

- analysing, synthesising and summarising information critically
- the ability to read and use appropriate literature with a full and critical understanding
- the ability to think independently and solve problems
- ability to take responsibility for their own learning and recognise their own learning style
- obtaining and integrating several lines of subject-specific evidence to formulate and test hypotheses
- applying subject knowledge and understanding to address familiar and unfamiliar problems recognising the moral and ethical issues surrounding computing and IT and experimentation and appreciating the need for ethical standards and professional codes of conduct designing, planning, conducting and reporting on investigations undertaking investigations of computer systems in a responsible, safe and ethical manner
- develop an appreciation of the interdisciplinary nature of computing and the capacity to give a clear and accurate account of a subject, marshal arguments in a mature way and engage in debate and dialogue both with specialists and non-specialists