



Qualifications and
Curriculum Authority



Llywodraeth Cynulliad Cymru
Welsh Assembly Government



GCE AS and A level subject criteria for information and communication technology

July 2006

QCA/06/2396

Contents

1. Introduction	3
2. Aims	3
3. Subject content	4
4. Key skills	5
5. Assessment objectives	6
6. Scheme of assessment	7

1. Introduction

1.1 AS and A level subject criteria set out the knowledge, understanding, skills and assessment objectives common to all AS and A level specifications in a given subject. They provide the framework within which the awarding body creates the detail of the specification.

Subject criteria are intended to:

- help ensure consistent and comparable standards in the same subject across the awarding bodies
- define the relationship between the AS and A level specifications, with the AS as a subset of the A level
- ensure that the rigour of A level is maintained
- help higher education institutions and employers know what has been studied and assessed.

Any specification that contains significant elements of the subject information and communication technology (ICT) must be consistent with the relevant parts of these subject criteria.

2. Aims

2.1 All specifications should encourage students to become discerning users of ICT, developing a broad range of ICT skills and knowledge and understanding of ICT. This should form a basis for progression into further learning, including progression from AS to A2, and/or employment.

2.2 All specifications in ICT should encourage students to develop:

- the capacity for thinking creatively, innovatively, analytically, logically and critically
- the skills to work collaboratively
- the ability to apply skills, knowledge and understanding of ICT in a range of contexts to solve problems
- an understanding of the consequences of using ICT on individuals, organisations and society and of social, legal, ethical and other considerations on the use of ICT
- an awareness of emerging technologies and an appreciation of the potential impact these may have on individuals, organisations and society.

3. Subject content

- 3.1 AS and A level specifications in ICT should build on the skills, knowledge and understanding set out in the subject criteria for GCSE ICT.
- 3.2 AS specifications in ICT should provide opportunities to develop students' skills, knowledge and understanding of ICT and to apply this to the solution of real or realistic problems. A level specifications should require students to develop a broader and deeper knowledge and understanding of ICT and to develop further the skills associated with applying this to produce solutions to real or realistic problems.

Knowledge and understanding

- 3.3 AS and A level specifications should require students to develop a knowledge and understanding of the following topics. AS specifications must address each of the sections in a balanced way but need not make explicit requirements for every item.

Data and information

- The characteristics of data and information
- The organisation and structuring of information to facilitate its effective use
- The methods of finding, selecting, exchanging and managing information to meet particular purposes
- The importance of adopting standards.

Applications and effects

- The use of ICT for a range of purposes
- An ICT system and its components
- How users interact with ICT systems
- How the use of ICT is influenced by social, cultural, legal, technical, ethical, economic, and environmental considerations
- The consequences of the use of ICT for individuals, organisations and society
- Security issues, including disaster recovery.

Hardware, software and communication

- The functions of hardware and its suitability for purpose
- The importance of interoperability and adopting standards
- An awareness of the need for and function of systems software
- The need for and attributes of a range of applications software and their appropriateness for particular purposes
- The characteristics of networks and other communication technologies
- The criteria for selecting appropriate software, hardware and communication technologies

Future developments

- Emerging technologies
- Potential future uses of ICT
- Implications of future developments and future use of ICT

Developing ICT solutions

- Systems development methodologies
- Tools and techniques for collaborative working
- The roles of IT professionals

Skills

3.4 AS and A level specifications should require students to develop skills in the following topics. AS specifications must address these in a balanced way but need not make explicit requirements for every item.

- Investigation and analysis
- Definition of requirements
- Design of a solution to meet a specification
- Selection and use of appropriate application software
- Testing and implementation of an ICT related solution
- Preparation of documentation
- Evaluation
- Collaborative working.

4. Key skills

4.1 AS and A level specifications in ICT should provide opportunities for developing and generating evidence for assessing relevant key skills from the list below. Where appropriate, these opportunities should be directly cross-referenced, at specified level(s) to the key skills standards which may be found on the QCA website (www.qca.org.uk).

- Application of number
- Communication
- Improving own learning and performance
- Information and communication technology
- Problem solving
- Working with others

5. Assessment objectives

- 5.1 AS and A level specifications have the same assessment objectives. In A level specifications, the assessment objectives relating to application, analysis and evaluation are given a higher weighting.
- 5.2 Knowledge, understanding and skills in ICT are closely linked. Specifications should require that students demonstrate the following assessment objectives in the context of the content prescribed.

AO1 Knowledge and understanding

Candidates should be able to demonstrate knowledge and understanding of:

- the characteristics of data and information, and the need for their organisation and manipulation to facilitate effective use
- the use of ICT for a range of purposes
- the influence of social, cultural, legal, technical, ethical, economic and environmental considerations on the use of ICT
- the consequences of using ICT for individuals, organisations and society
- the components, characteristics and functions of ICT systems (including hardware, software and communication) which allow effective solutions to be achieved
- the systematic development of high quality ICT related solutions to problems
- emerging technologies and their implications for future use of ICT.

AO2 Skills

Candidates should be able to:

- Investigate and analyse problems and produce a specification
- Design effective solutions
- Select and use appropriate application software
- Test and implement an effective ICT related system
- Document specifications and solutions
- Evaluate solutions and their own performance.

5.3 In each assessment scheme, the assessment objectives are to be weighted as follows.

Weightings			
	AS	A2	A level
AO1	55–70%	30–45%	42.5–57.5%
AO2	30–45%	55–70%	42.5–57.5%

The assessment objectives apply to the whole specification.

6. Scheme of assessment

6.1 All AS specifications in ICT may have a maximum weighting of 40 per cent for internal assessment.

6.2 All A level specifications must have internal assessment with a weighting of between 15 and 40%. No more than 40% of the A2 should be internally assessed.

6.3 Specifications must make clear how reliability and fairness are secured in internal assessment, by setting out requirements that ensure the robustness of each stage of the internal assessment, ie:

- the specific skills to be assessed
- setting of tasks
- extent of supervision in carrying out of tasks
- conditions under which assessment takes place
- marking of the assessment and internal standardising procedures
- any moderation process.

6.4 Assessment in AS specifications in ICT should:

- allow candidates to demonstrate their knowledge and understanding of ICT systems
- include at least one piece of work addressing a problem at an appropriate level which allows candidates to demonstrate at least two of the skills of analysing, designing, implementing, testing and evaluating systems.

In addition, assessment in A level specifications in ICT should require candidates to undertake one substantial piece of work over an extended period of time, which allows candidates to demonstrate the techniques of system development and documentation associated with a more substantial piece of work.

This work should complement the assessment carried out in the examination.

Synoptic assessment

- 6.5 Synoptic assessment should be included at A2, drawing on both assessment objectives and be designed to test candidates' understanding of the connections between different elements of the subject.

Synoptic assessment in ICT should require candidates to make connections between different areas of ICT represented in the specification and test their holistic understanding of the subject. In particular, candidates should be required to draw on their knowledge and understanding of information, software, hardware, communication, applications and effects, when demonstrating the skills associated with analysis, design, implementation and evaluation of ICT-based systems.

Quality of written communication

- 6.6 AS and A level specifications will be required to assess the candidates' quality of written communication in accordance with the guidance document produced by QCA.