

**CCEA GCE Specification in  
Information and Communication  
Technology**

For first teaching from September 2008

For first award of AS Level in Summer 2009

For first award of A Level in Summer 2010

Subject Code: 2653

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## Foreword

This booklet contains CCEA's Advanced Subsidiary (AS) and Advanced GCE ICT specification for first teaching from September 2008.

The AS is the first part of the full advanced GCE course and will be assessed at a standard appropriate for candidates who have completed the first half of the full Advanced GCE course.

The full Advanced GCE comprises the AS and the second half of the Advanced GCE course referred to as A2. However, the AS can be taken as a "stand-alone" qualification without progression to A2.

The A2 will be assessed at a standard appropriate for candidates who have completed a full advanced GCE course and will include synoptic assessment and an element of stretch and challenge.

The Advanced GCE award will be based on aggregation of the marks from the AS (50%) and the A2 (50%).

An A\* will be awarded to the candidates who attain an overall grade A in the qualification and an aggregate of at least 90% of the uniform marks across the A2 units.

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## 1 Introduction

This specification sets out the content and assessment details for CCEA's Advanced Subsidiary (AS) and Advanced Level (A Level) courses in ICT. This specification is for first teaching from September 2008. The latest version of this specification can be viewed and downloaded from the CCEA website at [www.ccea.org.uk](http://www.ccea.org.uk).

The AS course can be taken as a final qualification or as the first half of the A Level qualification. If students wish to obtain a full A Level qualification, they must also complete the second half of the course, referred to as A2. The first AS award for this specification will be made in 2009. The first A Level award will be made in 2010.

The specification builds on the broad objectives of the revised Northern Ireland Curriculum. It is also relevant to key curriculum concerns in England and Wales.

The specification builds upon Information and Communication Technology qualifications at Key Stage 4. The specification promotes progression through the AS and A Level and provides a suitable foundation for study of ICT or related courses in further or higher education. The AS specification also provides a coherent and relevant course for candidates who do not wish to progress further in the subject.

Candidates have the option of taking the modules in either the January or the summer series of examinations. This provides the opportunity for staged assessment and at the same time provides centres with flexibility in curriculum planning.

The aims of the specification are set out below.

### 1.1 Aims

The AS and A2 GCE Advanced level specifications should encourage students to:

- become discerning users of ICT; and
- develop a broad range of ICT skills, knowledge and understanding of ICT.

This should form a basis for progression into further learning, including progression from AS to A2 and/or employment.

In addition, the specification encourages 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; and

- an awareness of emerging technologies and an appreciation of the potential impact these may have on individuals, organisations and society.

## 1.2 Key features

The key features of the specification include:

- opportunities for students to progress to career paths leading to professional ICT management and responsible use of ICT within industry;
- advanced study of modern technology-based systems;
- a reduction in the assessment burden and the provision of stretch and challenge for A2 students;
- development of advanced skills in a range of generic packages;
- a mixture of examination formats and question types; and
- support for centres including detailed schemes of work.

## 1.3 Prior attainment

There is no specific requirement for prior learning. Although, it is envisaged that many candidates will have already gained skills, knowledge and understanding of ICT through their successful completion of a related GCSE course (either short or full). Some candidates may have completed a GCSE Applied ICT course before embarking on this award.

## 1.4 Prohibited combinations

In any one series of examinations, a candidate may not take examinations on this specification together with examinations on another specification governed by the same subject criteria.

The classification code for this specification is 2653.

## 2 Specification at a Glance

The structures of the AS and A Level courses are summarised in the table below:

Unit	Assessment	Weightings	Availability
AS 1: Components of ICT	2 hour external examination paper	50% of AS 25% of A Level	January and Summer
AS 2: Developing ICT Solutions	Internal Assessment of 2 compulsory tasks	50% of AS 25% of A Level	Summer only
A2 1: Information Systems	2 hour external examination paper	50% of A2 25% of A Level	January and Summer
A2 2: Approaches to Systems Development	Internal Assessment of a project	50% of A2 25% of A Level	Summer only

### 3 Subject Content

The AS course is divided into two units: AS 1 and AS 2. Students following the A Level course must study two further units: A2 1 and A2 2. The content of each of these units is set out below.

#### 3.1 Unit AS 1: Components of ICT

This unit is about acquiring knowledge and understanding of components of ICT, which is assessed by means of a two hour written examination. It also acts as a foundation for Unit A2 1: Information Systems for those candidates going on to A Level. The Content column lists the main content areas while the Learning Outcomes column lists the knowledge and understanding associated with this unit.

Content	Learning Outcomes
<p><b>1.1 Data and information</b></p> <p>The characteristics of data, information and knowledge</p> <p>The quality of information</p> <p>Costs of producing information</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> <li>• define what is meant by the terms knowledge, information and data;</li> <li>• using examples, understand the difference between knowledge, information and data;</li> <li>• distinguish between direct and indirect data sources;</li> <li>• describe the advantages and disadvantages of using direct and indirect data sources;</li> <li>• understand that information should be accurate, up-to-date, complete, relevant and presented effectively;</li> <li>• explain the following types of error in data capture, omission errors and transposition errors;</li> <li>• define data validation and data verification;</li> <li>• describe different types of validation - presence check, length check, type check, range check, format check, lookup tables, check digit;</li> <li>• understand the process involved in calculating a check digit using modulus 11 arithmetic;</li> <li>• describe the costs of producing information in terms of hardware, software and personnel;</li> </ul>

Content	Learning Outcomes
<p><b>1.1 Data and information (cont)</b></p> <p>The importance of adopting standards</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> <li>• understand the importance of standards for data storage;</li> <li>• discuss the purpose of standardising and professional bodies:                             <ul style="list-style-type: none"> <li>– PTT, ITU, ISO, ANSI, IEEE, ACM, BCS.</li> </ul> </li> </ul>
<p><b>1.2 Hardware and software components</b></p> <p>Input and Output</p> <p>Storage</p> <p>Processor</p>	<p><u>Hardware</u></p> <ul style="list-style-type: none"> <li>• evaluate a range of input and output devices:                             <ul style="list-style-type: none"> <li>– keyboards, pointing devices, smart cards, bar codes, OMR, MICR, ATM, touch screen, printers, plotters, monitors, scanner, sensors, interactive white board, data projectors, OCR, speech input, speech output and actuators;</li> </ul> </li> <li>• compare common optical and magnetic storage devices in terms of storage capacity, cost, speed of access and retrieval:                             <ul style="list-style-type: none"> <li>– hard disk, DVD, CD-RW, CD-ROM, CD-R, tape streamer, pen drive, Blu ray, HD DVD;</li> </ul> </li> <li>• suggest suitable purposes for common storage devices;</li> <li>• describe the purpose of the main CPU components: control unit, arithmetic and logic unit and internal memory (ROM, RAM, cache);</li> </ul>

Content	Learning Outcomes
<p><b>1.2 Hardware and software components (cont)</b></p> <p>System Software</p> <p>Application Software</p> <p>Open source software</p>	<p>Students should be able to:</p> <p><u>Software</u></p> <ul style="list-style-type: none"> <li>• describe the features of operating systems: single user, multi-tasking and multi-user;</li> <li>• describe the features of batch processing and real time transaction processing;</li> <li>• discuss the main features of generic software packages: word processing, database, spreadsheet, desktop publishing, presentation, graphics and web authoring;</li> <li>• compare the main features of typical search engines and browser software;</li> <li>• explain what is meant by open source software; and</li> <li>• describe the advantages and disadvantages of using open source software.</li> </ul>

Content	Learning Outcomes
<p><b>1.3 Network Communication</b></p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> <li>• discuss the main features of LAN topologies (ring, star, bus and bus/star composites);</li> <li>• discuss the main features of WAN;</li> <li>• describe the function of the following network resources: router, gateway, switches, hubs, bridge, firewall, proxy server;</li> <li>• compare the main features of e-mail, video conferencing and mobile telephone technology;</li> <li>• describe the resources required to access the Internet;</li> <li>• describe the purpose of an IP address;</li> <li>• understand what is meant by a communications protocol;</li> <li>• explain the purpose of TCP/IP in data transmission;</li> <li>• evaluate a range of communication technologies: ISDN, fibre optic, Bluetooth, wireless, GPRS, SMS, WIFI, WIMAX Zigbee; and</li> <li>• discuss the use of the Internet for a range of activities: communication, information searching and information dissemination.</li> </ul>



Content	Learning Outcomes
<p><b>1.4 Applications of ICT (cont)</b></p> <p>The consequences of the use of ICT for individuals, organisations and society</p> <p>Security issues, including disaster recovery</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> <li>• describe methods used to secure information – User ID and Passwords, access rights and data encryption;</li> <li>• explain what is meant by a virus;</li> <li>• compare various types of viruses: worm, macro and logic bomb;</li> <li>• explain the measures that can be taken to protect information systems from misuse; and</li> <li>• describe the main features of a disaster recovery plan.</li> </ul>

Content	Learning Outcomes
<p><b>1.5 Developing ICT applications</b></p> <p>The main stages of developing an ICT system</p> <p>Tools and techniques for collaborative working</p> <p>The roles of IT professionals</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> <li>• describe the main stages:               <ul style="list-style-type: none"> <li>– User requirements;</li> <li>– Design;</li> <li>– Implementation;</li> <li>– Testing (application);</li> <li>– Documenting (user and technical);</li> </ul> </li> <li>• discuss fact finding methods;</li> <li>• explain technical, legal and social feasibility;</li> <li>• explain the difference between application testing and acceptance testing;</li> <li>• explain changeover methods;</li> <li>• explain the need for documentation, both user and technical;</li> <li>• evaluate an ICT solution to a typical problem in terms of suitability, effectiveness and usability;</li> <li>• compare the use of a custom built package with an off-the-shelf package as a solution to a data processing problem;</li> <li>• understand the need for DFDs and ER diagrams;</li> <li>• compare evolutionary and throw-away prototyping; and</li> <li>• explain the different roles within an IT organisation: project manager, programmers, technician, end user.</li> </ul>

### 3.2 Unit AS 2: Developing ICT Solutions

This unit allows candidates to develop practical aspects of the subject and to apply their knowledge and understanding of ICT. Candidates will be expected to produce an ICT solution to task-related problems. The tasks should be self-contained problems with limited scope.

The solutions are likely to be implemented using advanced features of two standard generic application software packages, but the candidates are encouraged to use other software tools and objects as appropriate to complete their solutions.

The task could be set by the teacher who would then act as the end user, or it could be identified by the candidate in conjunction with the teacher and involve real end user(s). Candidates are encouraged to select a task appropriate to their capability and background. The teacher is advised to guide their students throughout the solutions to the problems selected.

With careful teacher guidance, this unit can provide opportunities for working collaboratively.

To gain marks in the upper band, candidates will be expected to provide detailed solutions to demanding tasks. Their solutions should reflect the use of advanced generic and package-specific skills.

Assessment for this module will be made up of:

- 1 A Data Processing Task (60 marks); and**
- 2 A Multimedia Task (60 marks).**

Candidates should prepare for these tasks by using appropriate software packages and acquiring the skills for each as outlined.

## Unit Content - Skills to be Acquired

### Data Processing

Feature	Skills to be acquired
<b>Data types and formats</b>	<ul style="list-style-type: none"> <li>• Make use of a range of data types: General, Number, Currency, Accounting, Date, Time, Percentage, Fraction, Scientific, Text, and Boolean.</li> </ul>
<b>Creating formulae and using functions</b>	<ul style="list-style-type: none"> <li>• Use basic Mathematical operators (+ - × /).</li> <li>• Creating formulae.</li> <li>• Use a range of built-in functions including IF, Lookup, common Statistical, common Mathematical, common Date and Time functions.</li> </ul>
<b>Creating and using queries</b>	<ul style="list-style-type: none"> <li>• Create a query using one or more criteria.</li> <li>• Create queries which make use of parameters.</li> <li>• Create queries which make use of calculated fields.</li> </ul>
<b>Data checking</b>	<ul style="list-style-type: none"> <li>• Use a range of Data Validation techniques including suitable error messages.</li> </ul>
<b>Forms</b>	<ul style="list-style-type: none"> <li>• Create forms. Add, delete and update records using a form. Edit form layout.</li> <li>• Incorporate a range of controls on forms: buttons (including command buttons), drop down list boxes, tick boxes, combo boxes, option boxes, check boxes, text boxes and dialogue boxes.</li> <li>• Make use of Lookup tables.</li> </ul>
<b>Reports</b>	<ul style="list-style-type: none"> <li>• Create reports. Format reports to include sorting, subtotals/totals, headers, footers, page numbers and pagination.</li> <li>• Create reports using queries as the data source.</li> <li>• Use chart types to present data appropriately.</li> </ul>

## Multimedia

Feature	Skills to be acquired
<b>Creating pages and layouts</b>	<ul style="list-style-type: none"> <li>• Create pages from a storyboard which make use of layout facilities such as layers, tables, frames and templates.</li> <li>• Use text and formatting which is appropriate for the medium chosen to present the package (eg web friendly fonts).</li> <li>• Incorporate colour and text styles which are appropriate for the audience.</li> </ul>
<b>Using links</b>	<ul style="list-style-type: none"> <li>• Develop a package-wide consistent navigation system.</li> <li>• Create and use links (or hyperlinks) for effective navigation through the package.</li> <li>• Create and use links to a variety of media.</li> <li>• Create and use links for file download.</li> </ul>
<b>Creating media and collecting assets</b>	<ul style="list-style-type: none"> <li>• Use appropriate software to create and edit graphics, movie, animation and sound files of suitable format and size for inclusion in the package.</li> <li>• Collect existing assets (such as existing images and electronic text) for use in the package.</li> </ul>
<b>Using media</b>	<ul style="list-style-type: none"> <li>• Incorporate a range of original media into the package in the form of graphics, movie, animation and sound.</li> <li>• Provide information for users on plug-ins required to run media files where appropriate.</li> </ul>
<b>Providing interaction and feedback</b>	<ul style="list-style-type: none"> <li>• Create an interface which provides user interaction through the use of: simple data collection, system messages, event driven code (eg rollover, click).</li> </ul>
<b>Design for accessibility</b>	<ul style="list-style-type: none"> <li>• Develop one aspect of the package for a user who has special requirements such as hearing or sight impairment.</li> </ul>

## Unit Content - Task Definitions

### 1 Data Processing Task (60 marks)

This task requires the candidate to use an appropriate software package to solve a realistic problem. The package should provide various software tools to produce solutions to a variety of data processing problems. Candidates may use any suitable software package that is capable of supporting the majority of skills from the checklist required to complete this task.

The context and selection of the task should involve both the teacher and the candidate, though it would be advisable to ensure an appropriately demanding task is undertaken which addresses the assessment criteria. If more than one candidate works on the same task, the teacher must ensure that they work on independent outcomes to facilitate accurate assessment and subsequent moderation.

Candidates should also understand and use:

- a variety of data types and formats to facilitate data entry;
- a range of formulae and functions;
- data validation techniques to minimise errors;
- techniques for creating forms; and
- queries and reporting techniques.

When completing this task, candidates should consider:

- producing a clear set of user requirements for their task;
- developing Technical Documentation for their solution; and
- developing User Documentation for the end user.

### User Requirements

When developing a set of user requirements, candidates should:

- produce a statement outlining the background to their chosen task; and
- specify clearly the aims and objectives for the task.

### Technical Documentation

This will consist of:

- **Design**

When producing the design specification, candidates should consider the design of:

- data structures;
- data checking;
- formulae and functions;
- queries;
- forms;
- reports;
- charts; and
- macros.

- **Testing**

Candidates must produce a test plan. The test plan should include testing for:

- data entry methods with valid and extremes of data;
- validation methods with valid, invalid and extremes of data;
- calculations produced by formulae or functions;
- forms;
- reports;
- charts;
- macros; and
- sorting and searching routines.

## **User Documentation**

Candidates should create a user guide which will guide a novice user through the system including:

- brief description of what the package does;
- hardware and software requirements;
- installation of software;
- operating instructions; and
- simple troubleshooting.

## **2 Multimedia Task (60 marks)**

This task requires the candidate to use an appropriate software package(s) to design a multimedia solution for a realistic problem. These should provide various software tools to create the main package and also to create and edit media in the form of graphics, animation and sound.

The context and selection of the task should involve both the teacher and the candidate, though it would be advisable to ensure an appropriately demanding task is undertaken which addresses the assessment criteria. If more than one candidate works on the same task, the teacher must ensure that they work on independent outcomes to facilitate accurate assessment and subsequent moderation.

Candidates should develop a finished product for electronic submission on an appropriate media. Whilst no documentation is to be submitted, candidates should be encouraged to plan the design of the package appropriately and will submit an electronic storyboard to show that planning has occurred. Candidates should use prototyping during the development phase of the package and should have an underpinning knowledge of this concept.

Candidates should also understand and use:

- storyboarding and prototyping to develop a system;
- appropriate pages and layouts;
- links or hyperlinks for navigation purposes;
- media creation and the collection of assets;
- media and plug-ins;

- interaction and feedback from users; and
- design for accessibility.

When completing this task, candidates should produce:

- a storyboard for their package;
- a multimedia package which is platform independent and which will run on any standard PC; and
- a short evaluation of the package.

### **Storyboard**

When developing storyboard, candidates should produce:

- a statement outlining the background to their chosen task;
- an overview of the navigation structure of the package; and
- a simple visual representation of each page in the package.

### **Multimedia Package**

The multimedia package should be prepared for electronic submission and should run on any standard PC. The package should have:

- between ten and fifteen pages connected using links and navigation menus and not inclusive of the links to the storyboard and evaluation;
- a storyboard for the package;
- the following media should be included in the presentation: graphics, animation and sound. Candidates should also be encouraged to create their own assets where applicable. These files should be suitably optimised to minimise the overall size of the package;
- page layouts which incorporate at least two of: tables, frames, layers and templates;
- user interaction;
- a page which collects data for use within the package;
- a page which demonstrates that the candidate has considered accessibility issues;
- an evaluation of the package; and
- well designed, user friendly pages which incorporate appropriate font and colour.

### **Evaluation of the Package**

Candidates should produce an evaluation of the package against the original design outlined in the storyboard.

### 3.3 Unit A2 1: Information Systems

This unit is about acquiring knowledge and understanding of Information Systems, which is assessed by means of a two hour written examination. It also acts as an extension to Unit AS 1: Components of ICT for those candidates progressing from AS Level. The Content column lists the main content areas while the Learning Outcomes column lists the knowledge and understanding associated with this unit.

Content	Learning Outcomes
<p><b>3.1 Database systems</b></p> <p>Relational databases</p> <p>Database Management Systems (DBMS)</p> <p>Management Information Systems (MIS)</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> <li>• describe the main features of a relational database;</li> <li>• understand what is meant by data consistency, data integrity, data redundancy and data independence in the context of both relational databases and flat files;</li> <li>• understand the purpose of entity relationship (ER) models and data normalisation and describe how each is performed;</li> <li>• produce entity relationship models and perform data normalisation (to 3NF);</li> <li>• describe the main components of a DBMS;</li> <li>• explain the role of the database administrator (DBA);</li> <li>• describe the facilities provided by a DBMS for end users;</li> <li>• understand the importance of information to a typical organisation for decision-making at operational, tactical and strategic levels;</li> <li>• distinguish between internal and external sources of information;</li> <li>• describe the purpose of a typical MIS and explain its main features;</li> <li>• describe the main features of decision support systems and expert systems;</li> <li>• describe and evaluate the use of decision support systems and expert systems;</li> </ul>

Content	Learning Outcomes
<p><b>3.1 Database systems (cont)</b></p> <p>Data security</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> <li>• describe the potential threats to the security of data;</li> <li>• understand the need for disaster recovery planning;</li> <li>• describe and justify common backup and recovery strategies.</li> </ul>
<p><b>3.2 Networked systems</b></p> <p>Types of network</p> <p>Communication</p> <p>Error detection</p> <p>Security issues</p>	<ul style="list-style-type: none"> <li>• describe the main features of client server and peer-to-peer networks;</li> <li>• describe the main features of centralised and distributed databases and the advantages and disadvantages of each;</li> <li>• discuss the impact of modern network technologies on communication including mobile and wireless communication;</li> <li>• explain the need for communication standards: the Open Systems Interconnection (OSI) model;</li> <li>• describe and evaluate methods of detecting and correcting data transmission errors: parity bits, checksums and echo checking;</li> <li>• describe the main methods of ensuring that network resources are accessible only by authorised users;</li> <li>• describe the main measures of ensuring that data transmission on a networked system is secure; and</li> <li>• explain the need for accounting and auditing software on a network.</li> </ul>



Content	Learning Outcomes
<p><b>3.4 The User Interface</b></p> <p>Human computer interaction</p> <p>User interface (UI) design techniques</p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> <li>• understand the importance of human computer interaction in a typical information system;</li> <li>• describe the main features of a range of user interfaces: command line, GUI, natural language, forms and dialogue;</li> <li>• discuss the psychological and ergonomic factors which influence human interaction with a computer system.</li> </ul>
<p><b>3.5 User support and training</b></p> <p>User support</p> <p>Training</p>	<ul style="list-style-type: none"> <li>• explain the support available to the user of an information system: hardcopy and electronic user guides, help desk, user groups; and</li> <li>• describe the use of ICT based resources for training and re-skilling of employees: on-line courses, interactive DVD and video conferencing.</li> </ul>



Content	Learning Outcomes
<b>3.7 Implications of ICT</b>  Organisations  Employees	Students should be able to:  <ul style="list-style-type: none"><li>• describe the impact of the increasing use of ICT in the service and manufacturing sectors; and</li><li>• describe the impact of the use of ICT on the employee: de-skilling, re-skilling and working from home.</li></ul>

### 3.4 Unit A2 2: Approaches to System Development

This unit will involve candidates producing a detailed project. The project will require candidates to identify and research a realistic problem for which there must be a real end user. Candidates should select a problem to be solved and not a project to complete. The problem should be of a substantial nature and should support the integration of the various skills and concepts developed during this course.

The solution is most likely to be implemented using appropriate generic applications software package(s). It is not within the spirit of this specification for candidates to use a stand-alone, general purpose programming language. To gain high marks, candidates will be expected to provide a detailed solution specification to a demanding problem. The solution should incorporate the use of a range of advanced software features and functionalities. The teacher is advised to guide candidates throughout each stage of the solution of the problem.

The problem should be of sufficient size and scope as to allow the candidate to demonstrate skills in all of the following areas:

- analysing a system;
- designing a solution;
- implementing and testing their solution;
- documenting their solution; and
- evaluating the solution.

Each of the steps of the problem (task) solving process should contain the detail as laid out below. There is a total of 80 marks available.

#### Analysis (20 marks)

The candidate should:

- define the nature of the problem to be solved;
- identify and use fact finding methods to investigate the problem (including questionnaires, observation and structured interviews);
- identify data sources;
- gather sample documents currently used;
- identify the current user activities;
- investigate the tasks carried out by the user;
- specify limitations of the current system;
- describe information requirements of a system; and
- state the objectives of new system.

#### Design (20 marks)

The candidate should:

- evaluate possible solutions;
- design and document data capture forms;
- design screen layouts, to include detailed designs of the proposed user interface;
- describe any validation required and user feedback required if any data is input in error;

- design and document (using appropriate techniques where applicable eg normalisation/entity relationship models) the data structures necessary to solve the problems indicated in the objectives;
- choose appropriate hardware and software; and
- relate the solution to the capabilities of the software and hardware.

### **Implementation and Testing (20 marks)**

The candidate should include:

- a software solution developed from the design;
- a comprehensive test plan produced from the system objectives evidencing:
  - objectives with cases of valid, invalid and extreme data;
  - testing of the user interface (navigation and displays etc);
  - system functionality; and
  - evidence of user testing;
- a detailed output from the testing, cross referencing evidence to the test plan; and
- a description of a strategy for implementing the system into the organisation.

### **User Documentation (10 marks)**

The candidate should include:

- an Installation Guide;
- step by step instructions for operating all aspects of the system;
- instructions for dealing with any errors that may occur as well as a guide to the errors;
- appropriate “Help” within the software solution; and
- backup procedures.

### **Evaluation (10 marks)**

The candidate should:

- evaluate results against objectives;
- identify strengths and limitations of the final system; and
- identify possible extensions to the system.

## 4 Scheme of Assessment

### 4.1 Assessment opportunities

Students can choose to be assessed in stages during their AS and A Level courses or to leave all assessment to the end of these courses. The availability of assessment units is shown in Section 2 of the specification.

Students can choose to resit AS and A2 assessment units. The best result for each assessment unit will count towards the AS and A Level qualifications.

Results for each assessment unit can continue to contribute to an AS or A Level qualification while the specification is offered.

### 4.2 Assessment objectives

The AS and A Level specifications have the same assessment objectives. In the A2 specification, the assessment objectives relating to application, analysis and evaluation are given a higher weighting.

#### **AO1 Knowledge and understanding**

Candidates should be able to demonstrate knowledge and understanding of:

- the characteristics of data and information, 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; and
- 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; and
- evaluate solutions and their own performance.

### 4.3 Assessment objective weightings

The assessment objective weightings for each assessment unit and the overall AS and A Level qualifications are set out in the table below.

Assessment objective	Assessment Units				Overall	
	AS 1	AS 2	A2 1	A2 2	AS	A2
AO1	80%	20%	80%	20%	50%	50%
AO2	20%	80%	20%	80%	50%	50%

### 4.4 Quality of written communication

Assessment in AS and A Level qualifications in ICT requires students to demonstrate their quality of written communication. In particular, students are required to:

- ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear;
- select and use a form and style of writing appropriate to purpose and to complex subject matter; and
- organise information clearly and coherently, using specialist ICT vocabulary where appropriate.

Students' quality of written communication is assessed qualitatively as an integral part of all units at AS and A2.

### 4.5 Synoptic assessment

The A2 assessment units include an element of synoptic assessment. This allows students to demonstrate expertise in the essential knowledge, understanding and skills of ICT.

In ICT, synoptic assessment requires that students demonstrate that they can:

- make connections between different areas of ICT represented in the specification and test their holistic understanding of this subject; and
- 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.

### 4.6 Stretch and challenge

The A2 assessment units provide opportunities for stretch and challenge. This is achieved by:

- using a variety of stems in questions;
- ensuring connectivity between sections of questions;
- providing opportunities for extended writing, eg A2 2; and
- using questions which elicit a full range of response types.

## **4.7 Reporting and grading**

The results of individual assessment units are reported on a uniform mark scale that reflects the assessment weighting of each unit.

AS qualifications are awarded on a five grade scale from A to E with A being the highest. A Level qualifications are awarded on a six grade scale from A\* to E with A\* being the highest. We determine the AS and A Level grades awarded by aggregating the uniform marks obtained on individual assessment units. To be awarded an A\*, candidates will need to achieve a grade A on their full A Level qualification and an A\* on the aggregate of their A2 units. For students who fail to attain a grade E, we report their results as unclassified (U).

The grades we award match the performance descriptions published by the regulatory authorities.

## 5 Guidance on Internal Assessment

### 5.1 Setting of tasks

Teachers should ensure that tasks are appropriate and reflect the requirements as set out in Section 3.2 and Section 3.4. It is essential that the teacher acts as a facilitator and ensures that the task undertaken by the student is appropriate and achievable. Teachers will be expected to give guidance in the planning and realisation of each coursework component to ensure that:

- the task is reasonable for the individual student to undertake and can be completed effectively in the time available;
- the work meets the relevant requirements of the specification;
- the work can be assessed using the specified assessment criteria; and
- the coursework is the unaided work of the student.

The assessment units will also be internally marked by the centre.

### 5.2 Supervision of students

Teachers are advised to ensure candidates produce their own work and do not collaborate on either of the assessment units, especially when chosen tasks are very similar in nature and content.

### 5.3 Assessment conditions

Teachers are advised to guide candidates through the stages of the problem and to observe their activities and outcomes.

### 5.4 Marking and internal standardisation

A full assessment criteria for each assessment unit can be found in Appendix 1 (Unit 2) and Appendix 2 (Unit 4).

It is the responsibility of the centre to ensure that all coursework elements have been marked using the same standards.

Where there is more than one teaching group involved, the centre must carry out internal standardisation of assessments before submitting to the Council.

The purpose of this exercise is to ensure, as far as possible, that each of the teachers has applied the assessment criteria consistently when making assessments.

As a result of this internal standardisation, it may be necessary to adjust the marking of individual teachers to bring their assessments into line with those of the other teachers in the department and to match the standards promulgated at the Agreement Trial.

All coursework units to be entered in any one year must be assessed, and standardised marks must be sent to the Council by 1<sup>st</sup> May using the centre Internal Assessment Forms provided by the Council or the EDI. Work should be submitted two weeks

before Tuesday 1<sup>st</sup> May to enable teachers to mark, annotate mark sheets and complete internal standardisation.

A copy of the Candidate Record Sheet for all students in the centre should be sent to the Council with the marks.

Each coursework unit must be marked against the appropriate Assessment Criteria.

The mark awarded must be recorded in the appropriate column of the Candidate Record Sheet supplied by the Council.

A zero mark should only be awarded when a student has submitted no evidence for a particular criterion.

## **5.5 Moderation**

Moderation will be carried out by CCEA. Our Moderators will sample and scrutinise a suitable number of scripts from each Centre. Feedback about the quality of assessment will be provided to each Centre.

Full instructions about details of the moderation procedures, the nature of sampling and dates by which marks and samples have to be submitted to CCEA will be issued at the appropriate time.

## 6 Links

### 6.1 Support materials

CCEA currently provides the following materials to support this specification:

- specimen papers and mark schemes;
- a resource list; and
- Chief Examiner's reports.

CCEA will expand its range of support materials to include:

- a dedicated microsite;
- teacher support days; and
- schemes of work.

Details of CCEA's Annual Support Programme of events and materials for ICT can be found on the CCEA website at [www.ccea.org.uk](http://www.ccea.org.uk).

### 6.2 Curriculum objectives

This specification addresses and builds upon the broad curriculum objectives for Northern Ireland, England and Wales. In particular, it allows students to become aware of:

- spiritual, moral, ethical, social, legislative [including equality and disability discrimination], economic and cultural issues. These issues are addressed in Unit 1.4, the applications of ICT, which includes the effects on the individual and society. The use of the Internet is also dealt with under this Unit;
- sustainable development, health and safety considerations and European developments. This is addressed within Unit 3.4 – the user interface and Unit 3.6, legal and professional issues; and
- the skills agenda and employability. The issue is addressed within Unit 3.7: Implications of information systems.

### 6.3 Key skills

All units in this specification provide opportunities for developing and generating evidence for assessing the following nationally specified Key Skills at Level 3:

- Communication;
- Application of Number;
- Information and Communication Technology;
- Working with Others;
- Improving Own Learning and Performance; and
- Problem-Solving.

The Key Skill of Communication will contribute to the assessment of this specification through the assessment of candidates' quality of written communication as detailed on page 29. A table that fully signposts and exemplifies the types of opportunity for developing and generating evidence for assessing Key Skills in ICT, that may arise during the AS/A2 Level course, can be found on the CCEA website at [www.ccea.org.uk](http://www.ccea.org.uk).

## 6.4 Performance descriptions

Performance descriptions for the AS and A2 judgemental A/B and E/U boundaries can be obtained from the QCA website at [www.qca.org.uk](http://www.qca.org.uk).

## 6.5 Examination entries

The following entry codes apply to individual assessment units and the overall AS and A Level cash-ins in ICT:

AS 1:	AAW11
AS 2:	AAW12
AS cash-in:	S2653
A2 1:	AAW21
A2 2:	AAW22
A Level cash-in:	A2653

You can view details of how to make entries on our website. Alternatively, you can contact our Entries Team using the details provided in Section 6.8.

## 6.6 Students with particular requirements

We have designed this specification to minimise the need to adjust the assessment of students who have particular requirements. Details of the arrangements you can make for such students are available in the Joint Council for Qualifications document *Access Arrangements and Special Consideration: Regulations and Guidance Relating to Candidates Who Are Eligible for Adjustments in Examinations*.

## 6.7 Disability Discrimination Act (DDA)

AS/A Levels often require assessment of a broad range of competences. This is because they are general qualifications and, as such, prepare candidates for a wide range of occupations and higher level courses.

The revised AS/A Level qualification and subject criteria were reviewed to identify whether any of the competences required by the subject presented a potential barrier to any disabled candidates. If this was the case, the situation was reviewed again to ensure that such competences were included only where essential to the subject. The findings of this process were discussed with disability groups and with disabled people.

Reasonable adjustments are made for disabled candidates in order to enable them to access the assessments. For this reason, very few candidates will have a complete barrier to any part of the assessment. Information on reasonable adjustments is found in the Joint Council for Qualifications document *Access Arrangements and Special Consideration: Regulations and Guidance Relating to Candidates Who are Eligible for Adjustments in Examinations*.

Candidates who are still unable to access a significant part of the assessment, even after exploring all possibilities through reasonable adjustments, may still be able to receive an award. They would be given a grade on the parts of the assessment they have taken and there would be an indication on their certificate that not all of the competences have been addressed. *This will be kept under review and may be amended in the future.*

## 6.8 Contact details

The following list provides contact details for relevant members of CCEA staff:

- Specification Support Officer: Nuala Braniff  
(telephone: (028) 9026 1200, extension 2292, email: [nbraniff@ccea.org.uk](mailto:nbraniff@ccea.org.uk))
- Officer with Subject Responsibility: Joe McGurk  
(telephone: (028) 9026 1200, email: [jmcgurk@ccea.org.uk](mailto:jmcgurk@ccea.org.uk))
- Examination Entries, Results and Certification: Philip Macauley  
(telephone: (028) 9026 1262, email: [pmcauley@ccea.org.uk](mailto:pmcauley@ccea.org.uk))
- Examiner Recruitment  
(telephone: (028) 9026 1243, email: [appointments@ccea.org.uk](mailto:appointments@ccea.org.uk))
- Distribution (past papers and support materials)  
(telephone: (028) 9026 1228, email: [smurray@ccea.org.uk](mailto:smurray@ccea.org.uk))
- Support Events Administration: Events Information Service  
(telephone: (028) 9026 1401, email: [events@ccea.org.uk](mailto:events@ccea.org.uk))
- Information Section (including Freedom of Information requests)  
(telephone: (028) 9026 1200, email: [info@ccea.org.uk](mailto:info@ccea.org.uk))
- Business Assurance (appeals): Jeffrey Hamilton  
(telephone: (028) 9026 1205, email: [jhamilton@ccea.org.uk](mailto:jhamilton@ccea.org.uk)).

## Appendix 1

### Unit 2 Multimedia – Assessment Criteria

Feature	Mark Band 1	Range 1	Mark Band 2	Range 2	Mark Band 3	Range 3	Mark Band 4	Range 4
<b>Storyboard</b> AO1 (All and in particular : the systematic development of high quality ICT related solutions to problems)	Candidate produces a minimal storyboard which reflects only some of the user requirements.	0-1	Candidate produces simple wireframe diagrams for pages. Diagrams do not show detail of page content.	2-3	Candidate produces detailed wireframe diagrams for pages. Diagrams show detail of page content and navigation routes.	4-5	Candidate produces detailed wireframe diagrams for pages. Diagrams show a high level of detail of page content and navigation routes. Storyboard provides enough annotation for a third party to implement the solution.	6-7
<b>Page layouts and links</b> AO2	Candidate produces multimedia pages which include some links and make use of layout tools.	0-2	Candidate produces a structured multimedia package (or package) which includes the agreed content all of which can be navigated from a home page.	3-6	Candidate produces highly structured multimedia package (or package) which includes the agreed content and provides the user with a number of navigational routes. The package makes use of two or more of the layout tools stated in the specification (e.g. Frames, Tables, Layers and Templates). Links to a variety of filetypes are included for viewing and downloading purposes. Appropriate use of font and colour has been employed. All links are operational.	7-10	Candidate produces a highly structured multimedia package (or package) which includes the agreed content and makes appropriate use of a variety of the layout tools stated in the specification (e.g. Frames, Tables, Layers and Templates). The package is easily navigable and presents the correct information in a manner appropriate for the audience. Links to a wide variety of filetypes are included for viewing and downloading purposes in an appropriate format. Use of font and colour is consistent throughout the package. All links are operational.	11-14
<b>Media and assets</b> AO2	Candidate has not included some media or pictures in the package.	0-2	Candidate has included a range of existing pictures and media in the package. No editing or creation of new assets or media has been undertaken by the candidate.	3-6	Candidate has incorporated a number of relevant assets from graphics, sound, animation and other assets. All assets are operational and are used in an appropriate context. Assets enhance the multimedia aspect of the package. Some consideration to optimization is evident.	7-10	Candidate has created and incorporated a range of relevant assets: graphics, sound, animation and others. All assets are operational and have been optimised to enhance the performance of the package. Information on required plugins is available for users.	11-14
<b>User interaction and data collection</b> AO2	Candidate has not included minimal user interaction within the package.	0-2	Candidate has included some basic user interaction. The user can initiate events and the system provides basic feedback to the user.	3-5	Candidate has included user interaction on each page of the package. The system provides informative feedback for users. Data collection for use within the package has been included.	6-8	Candidate has made appropriate use of user interaction in the presentation of the package. The system provides informative feedback for users which allows them to take corrective action. Data collection for use within the package has been included.	9-11

Feature	Mark Band 1	Range 1	Mark Band 2	Range 2	Mark Band 3	Range 3	Mark Band 4	Range 4
<b>Accessibility</b> <b>AO1</b> (All and in particular the consequences of using ICT for individuals, organisations and society;)	Candidate has considered accessibility issues and implemented an aspect of this.	0-1	Candidate has considered at least one accessibility issue and implemented this on the selected page.	2-3	Candidate has considered a range of accessibility issues and has implemented these on the selected page. The accessibility page is fully operational and is signposted on the main website.	4-5	Candidate has considered a range of accessibility issues and included these on the selected page. The accessibility page is fit for purpose and content has been supplemented as well as replaced to take account of accessibility issues.	6-7
<b>Evaluation</b> <b>AO2</b>	Some evaluation of the package has been included.	0-1	Candidate evaluates the package's performance with little consideration of future developments or enhancements. A basic evaluation of the package's design is included. This is evidenced by some reference to the user requirements and the original storyboard design.	2-3	Candidate evaluates the package's performance with some suggestions for future developments and enhancements. An evaluation of the package's design is included. This is evidenced by direct reference to its performance and the original storyboard design. Some technical language is included in the evaluation.	4-5	Candidate evaluates the package's performance showing an understanding of its limitations. Candidate makes realistic suggestions for improvement and future enhancements. An evaluation of the package's design includes direct reference to its performance from the user's perspective and the original storyboard design. Evaluation of accessibility is included. Technical language is used appropriately throughout the evaluation.	6-7
								Total 60

## Unit 2 Data Processing – Assessment Criteria

Feature	Mark Band 1	Range 1	Mark Band 2	Range 2	Mark Band 3	Range 3	Mark Band 4	Range 4
<b>User requirements AO1 (All)</b>	Candidate includes a short description of user requirements only.	0-2	Candidate produces a basic statement of user requirements detailing some but not all of the main tasks to be completed.	3-5	Candidate produces a complete list of user requirements which will help provide a solution to the problem presented. All of the main tasks are detailed.	6-8	Candidate produces a complete list of user requirements which will provide a high quality solution to the problem presented. All of the main tasks are detailed and criteria for evaluating the end product has been included.	9-10
<b>Technical Documentation – design AO2</b>	Candidate does not include a basic design document showing only the form layout for the entire system.	0-4	<p>Candidate produces a simple design document which considers the input, out and processing requirements of the system.</p> <p>Candidate includes a simple definition of data structures in terms of fields and records (rows and columns).</p> <p>Simple data capture and reporting layouts have been included.</p>	5-8	<p>Candidate produces a detailed design document which details fully the input, processing and output requirements of the system.</p> <p>Candidates include definitions of data structures in terms of fields and records (rows and columns) and selects a range of appropriate data types.</p> <p>Candidate includes design of data capture forms which will use a range of controls and events.</p> <p>Candidate includes report designs which will make use of selected recordsets, in – built mathematical functions and graphical representation of data.</p>	9-12	<p>Candidate produces a detailed design document which references the user requirements and details fully the input processing and output requirements of the system.</p> <p>Candidate includes a structured definition of data and defines suitable data checks. This is evidenced by the presence of a range of data types which require a variety of validation checks.</p> <p>Candidate has designed an integrated menu system which will contain forms with varied purposes and a wide range of controls and events. Candidate includes structured reports which make use of selected recordsets, in built mathematical functions, calculations and graphical presentation of data. Report designs are detailed and the purpose of each report is related to the user requirements. Layout shows consideration of sorting, subtotals/totals, headers, footers, page numbers and pagination.</p>	13-18
<b>Technical Documentation – testing AO2</b>	Candidate includes a basic test plan relating to data input only.	0-4	Candidate includes a basic test plan which tests data entry and navigation.	5-8	<p>Candidate includes a testplan which tests data entry and includes suitable extreme, valid and invalid data. Testing for calculations, sorting and searching output is included.</p> <p>A plan to test for navigation through the system is included together with tests to ensure that report output is accurate.</p>	9-12	<p>Candidate includes a structured testplan which tests data entry and includes suitable extreme, valid and invalid data. The testplan reflects the validation checks included in the design section and this is cross referenced. Tests for all calculations, sorting and searching have been included. The expected outcome for each test is clearly identified.</p> <p>Candidate demonstrates clearly how navigation through the system will be tested and identifies the expected outcome at each stage.</p> <p>The design document contains all the relevant sections and could be used by a third party to develop the system.</p>	13-18

Feature	Mark Band 1	Range 1	Mark Band 2	Range 2	Mark Band 3	Range 3	Mark Band 4	Range 4
<b>User documentation AO2</b>	Candidate includes some basic user documentation.	0-2	Candidate includes a basic user guide which makes some use of graphics. The main elements of the system are included and users are given some information on installation.	3-6	Candidate includes a detailed user guide which makes appropriate use of graphics and includes screenshots presented in a logical sequence.  The user guide contains relevant information in all of the required sections and could be used to enable a novice user to install and use the system. A suitable page numbering system has been adopted.	7-10	Candidate includes a detailed and structured user guide which makes appropriate use of graphics and includes screenshots presented in a logical sequence. The user guide uses language appropriate for the target audience. A suitable page numbering and indexing has been included for ease of use.  The document is user friendly characterised by good use of language, clearly sectioned areas, well laid out information and clear instructions which can be easily executed.	11-14
								Total 60

AO1 total 24 marks = 20%

AO2 total 96 marks = 80%

## Appendix 2

### Unit 4 – Assessment Criteria

#### Analysis (20 marks)

Indicator	Mark Range
<p>A detailed coherent analysis has been produced for a demanding problem. Full discussion of information requirements <b>including fact finding</b>.</p> <p>Demonstrates an in-depth understanding of structured analysis techniques in the investigation and effective use of structured analysis tools in specifying the system.</p>	16-20
<p>A good analysis has been produced for a demanding problem, or a detailed analysis has been produced for a less demanding problem. A discussion of information requirements <b>including fact finding</b>.</p> <p>Demonstrates a good understanding of structured analysis techniques in the investigation and reasonable use of structured analysis tools in specifying the system.</p>	11-15
<p>A good analysis of a simple problem or a limited analysis of a difficult problem. Requirements specification included but with little or no justification. Limited use made of structured methods in investigating and specifying.</p>	6-10
<p>A simple problem with little evidence of any analysis, aims not clearly identified, poor investigation and recording of findings. Little use made of structured methods in investigating and specifying.</p>	0-5

## Unit 4 – Assessment Criteria

### Design (20 marks)

Indicator	Mark Range
A detailed and well justified solution design to a demanding problem. Full consideration given to the human computer interface, data structures, data checking, form design and data controls. The solution design is highly structured and makes very good use of appropriate design tools and techniques. The design documentation provides details about hardware and software.	16-20
A reasonably detailed and fairly well justified solution design to a demanding problem or a detailed and well justified solution design to a less demanding problem. Good consideration given to the human computer interface, data structures, data checking, form design and data controls. The solution design is structured and most of the tasks identified in the analysis have been addressed. The design documentation provides details about hardware and software.	11-15
Detailed design of a simple problem or an outline design of a demanding problem. Little or no consideration given to alternative approaches. Some consideration given to aspects of the human computer interface, data organisation, data checking, form design and data controls. The design does not address all of the tasks identified in the analysis and some of those that it does are poorly dealt with. Limited mention of hardware and software.	6-10
Limited consideration given to the design of a simple problem.	0-5

## Unit 4 – Assessment Criteria

### Implementation and Testing (20 marks)

Indicator	Mark Range
<p>Evidence of an effective software solution to a demanding problem. Clear evidence of a full and effective test plan for a demanding problem. The results of the testing are fully documented with outputs cross-referenced to the original plan. Evidence that all functions agreed upon with the user(s) are indeed present and correct. Corrective action taken due to test results clearly documented. <b>Plan</b> for implementing the solution.</p>	16-20
<p>Evidence of a reasonable software solution to a demanding problem or an effective software solution to a less demanding problem. Evidence of a reasonable test plan for a demanding problem. Test plan followed in a systematic way but the test plan has omissions in it and/or not all cases have been tested (ie have no evidence of testing). Some documentation of corrective action taken due to test results. <b>Plan</b> for implementing the solution.</p>	11-15
<p>Evidence of an effective software solution to a simple problem or a limited software solution to a demanding problem. Evidence of an effective test plan and cross-referenced outputs for a simple problem or a patchy/limited testing of a demanding problem. Brief <b>plan</b> for implementing the solution.</p>	6-10
<p>Inadequate software solution to a simple problem. Inadequate test strategy and test plan devised or a plan followed in a limited fashion. Little or no hard copy evidence of the results of testing or implementation of solution.</p>	0-5

## Unit 4 – Assessment Criteria

### User Documentation (10 marks)

Indicator	Mark Range
A comprehensive user guide for a complex system, well presented, all components included and described in suitable detail.	8-10
A reasonably thorough and well-presented user guide for a complex system with some components not present or poorly described.	5-7
User guide, well constructed and presented, appropriate for a simple system.	2-4
Limited user guide.	0-1

### Evaluation (10 marks)

Indicator	Mark Range
The effectiveness of the solution to a substantial project has been fully assessed. Realistic suggestions for improvements. Realistic awareness of limitations/inadequacies.	8-10
A reasonable assessment given to a substantial project with strengths and limitations identified. Good suggestions for improvements to the system.	5-7
Some suggestions for improvements to the system. A reasonable assessment given to a simple project or a partial assessment of a substantial project.	2-4
Limited/vague review with trivial suggestions on how to improve the system.	0-1

### Total (80 Marks)

## Summary of Changes since First Issue

(all document changes are marked in red)

Revision History Number	Date of Change	Page Number	Change Made
Version 1	N/A	N/A	First issue
Version 2	10 September 2009	6–12	Amendments to sections: <b>1.1 Data and information,</b> <b>1.12 Hardware and software components,</b> <b>1.3 Network Communication</b> and <b>1.4 Applications of ICT</b>
Version 2	10 September 2009	18–26	Amendments and deletions to sections <b>3.1 Database systems,</b> <b>3.2 Networked systems,</b> <b>3.3 Software development;</b> <b>3.4 The User Interface,</b> <b>3.5 User support and training, and</b> <b>3.6 Legal and professional issues</b> and <b>3.7 Implications of ICT</b>
Version 2	28 September 2009	39–42	Amendments to <b>Assessment Criteria</b> and <b>marks in Appendix 2</b>
Version 3	28 September 2009	Subject Cover Page	Subject Code changed from 2650 to 2653
Version 3	28 September 2009	Front Cover	Subject Code changed from 2650 to 2653
Version 3	28 September 2009	4	In section <b>1.4 Prohibited combinations</b> code changed to 2653.

Version 3	28 September 2009	23	Comma removed after the word employees in second bullet point.
Version 3	28 September 2009	33	In section <b>6.5 Examination Entries</b> AS and A Level cash-in codes changed.
Version 3	28 September 2009	34	In section <b>6.8 Contact details</b> amended.
Version 4	12 October 2009	6	Under <b>Learning Outcomes</b> word modules changed to modulus
Version 4	12 October 2009	10	Under <b>Learning Outcomes</b> EPTPOS changed to EFIPOS
Version 4	12 October 2009	18	Under <b>Multimedia Package</b> third bullet point amended
Version 4	12 October 2009	35	Amendments made to Mark Band 3 and 4 in Media and assets A02 row
Version 4	12 October 2009	42	Amended title
Version 5	8 December	39	Amendments made to Unit 4 – Assessment Criteria Analysis (2 sentences deleted)
Version 5	8 December	41	Amendments made to Unit 4 – Assessment Criteria Implementation and Testing (parts of sentences deleted)