Specification

Edexcel GCSE in Applied Information and Communication Technology (Double Award) (2331)

For first award in 2004

June 2002

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GCSE in Applied Information and Communication Technology (Double Award)

Specification summary

GCSEs in vocational subjects

A range of GCSE (Double Award) specifications in vocational subjects has been introduced to replace and extend the range of Part One GNVQ courses at levels 1 and 2 of the National Framework of Qualifications. They can be taken as two-year courses from September 2002 and one-year courses from September 2003 for first awarding in summer 2004.

Edexcel GCSE in Applied Information and Communication Technology (Double Award)

The Edexcel GCSE in Applied Information and Communication Technology (Double Award) has been designed to provide a broad educational basis for further training, further education or for moving into appropriate employment within the ICT sector. The QCA Qualification Accreditation Number for this title is 100/2082/2.

Specification structure

The specification consists of three compulsory units, which are equally weighted. Two units are internally-assessed through the production of portfolios, and one is externally-assessed by a written test. The first external assessment opportunity will be in June 2003, and the first moderation of internal assessment will be carried out in June 2004.

Unit content	Assessment
Unit 1: ICT Tools and Applications How ICT tools and applications are used by different organisations together with an investigation of what applications are available to those organisations. The applications used could include word-processing, spreadsheets, databases, web browsers, CAD software and multimedia packages.	**External assessment** A two and a half hour computer-based examination.
Unit 2: ICT in Organisations How and why organisations use ICT; investigation of the main hardware components of an ICT system; how ICT systems are designed and implemented for a given situation.	**Internal assessment** An investigation into how the hardware and software requirements of an organisation can be met. Report on the design and implementation of an ICT system.
Unit 3: ICT and Society Learn how ICT affects everyday life including your own use of ICT. Investigation of how technology has influenced working styles, legislation, entertainment and leisure and personal communications.	**Internal assessment** An investigation into how ICT affects and influences yourself and your local community.

Introduction

Rationale

GCSE (Double Awards) in vocational subjects cover both levels 1 and 2 (foundation and intermediate levels) of the National Framework of Qualifications. They replace and extend the range of Part One GNVQs and are at an equivalent level to Foundation and Intermediate GNVQs and to NVQs at levels 1 and 2.

The aims of these GCSEs are to:

÷ widen participation in vocationally-related learning pre-16

÷ allow those students to experience vocationally-related learning, to see if it is suitable for them

÷ enable those students to make valid personal choices on completion of the qualification

÷ encourage post-16 students to try a vocationally-related course, where maybe another programme has previously not proved appropriate for them

÷ to raise attainment at levels 1 and 2/foundation and intermediate levels of the National Framework of Qualifications.

The broad objectives of these GCSEs are to:

÷ introduce students to work-related learning

÷ provide students with an overview of the sector

÷ give students the technical knowledge, skills and understanding associated with the subject at these levels

÷ equip students with some of skills they will need in the workplace or in further education or training

÷ empower students to take charge of their own learning and development

÷ provide a range of teaching, learning and assessment styles to motivate students to achieve the best they can.

These GCSEs contribute to the quality and coherence of provision nationally, as shown by:

÷ the consultation undertaken by QCA in autumn 2000

÷ the positive Ofsted reports relating to Part One GNVQs (on which these GCSEs are based)

÷ their clear place in the Government's vision for secondary education for the next ten years.

The GCSE in Applied Information and Communication Technology (Double Award) has been designed to provide a broad educational basis for further training, further education or for moving into employment within the technology sector. This is achieved by ensuring that students develop the general skills, knowledge and understanding needed within the sector. This specification conforms to the subject criteria for GCSE specifications in Information and Communication Technology, which set out the knowledge, understanding, skills and schemes of assessment common to all GCSE specifications in the subject. Subject criteria help ensure consistent and comparable standards in the same subject area across awarding bodies and help further and higher education institutions and employers know what has been studied and assessed.

Aims

The aims of the GCSE specifications in Applied Information and Communication Technology are:

- to prepare students for progression to employment and/or further training in the ICT sector through the development of knowledge, skills and understanding needed for work in this sector
- to increase students' knowledge and understanding of the ICT sector through the investigation and evaluation of a range of technology and its use within organisations
- to develop students' awareness of the influences of ICT on individual's and society including
- promote individuals' awareness of legislation, working styles and entertainment and leisure in the ICT sector
- to encourage students to recognise the importance of the stages of development of an ICT system
- to promote a critical and analytical approach to problem solving within the vocational context.

Access

Edexcel's policy concerning access to our qualifications is that:

- they must be available to anyone who is capable of reaching the required standard
- they must be free from barriers that restrict access and progression
- equal opportunities exist for all students.

Recommended prior learning

Students embarking on a GCSE in Applied Information and Communication Technology should have achieved a general educational level equivalent to Level 3 of the National Curriculum or Entry Level 3 in the National Qualifications Framework. They would find the following learning, skills and aptitudes helpful:

- basic proficiency in literacy
- basic proficiency in numeracy
- some aptitude for computers
- some motivation to work independently.

Progression

This qualification supports progression into further education, training or employment. Appropriate further education includes GCE, VCE or other vocationally-related qualifications such as GNVQs and Edexcel BTEC Firsts and Nationals. Appropriate training includes Modern Apprenticeships or the NVQs in Information Technology.

Links with other qualifications, forbidden combinations and classification code

There is some natural linkage between this specification and the Edexcel GCSE in Information and Communication Technology (1185). Please refer to the table in *Appendix B* which indicates where the links occur.

There is also some overlap with the Foundation and Intermediate GNVQs in Information and Communication Technology. The linkage occurs largely in Compulsory Units 1-3 of the Foundation and Intermediate GNVQ ICT specifications.

The BTEC First for IT Practitioners contains some units that link to the GCSE in Applied Information and Communication Technology (Double Award).

Students entering for this specification may not, in the same series of examinations, enter for:

÷ Foundation and Intermediate six-unit GNVQs in Information and Communication Technology

÷ all GCSEs and Short Courses in Information and Communication Technology.

Every specification is assigned a national classification code indicating the subject area to which it belongs. The classification code for this specification is 0010.

Centres should be aware that students who enter for more than one Level 1 or Level 2 qualification with the same classification code will have only one grade (the highest) counted for the purpose of the school and college performance tables.

Subject content

Unit titles

The specification consists of three compulsory units:

÷ Unit 1: ICT Tools and Applications

÷ Unit 2: ICT in Organisations

÷ Unit 3: ICT and Society.

Unit structure

Each unit is made up of a number of sections, some of which are directed at the student while others are directed at the teacher. The sections are:

About this unit

This section provides an introduction to the content of the unit and states its relationship, if any, to other units. It also states the form of assessment for the unit.

What you need to learn

This section states what students need to know and be able to do to achieve the unit.

Assessment evidence (for internally-assessed units only)

This section starts with an outline for the students of the tasks they need to carry out and the types of evidence they need to produce. It is followed by the marking grid to be used by the person assessing the evidence. This grid is the only version to be used for assessment purposes, but teachers may prefer to adapt it for students and incorporate it into a centre-produced guidance document.

Guidance for teachers

This section gives suggestions for appropriate delivery strategies, and develops the information in the marking grid to give further guidance on how marks should be allocated. It also gives suggestions for associated resources.

Relationship to National Occupational Standards

Details of how this specification relates to National Occupational Standards can be found on the QCA website, www.qca.org.uk

Assessment

Statutory requirements

All assessment of this specification will be carried out in accordance with the GCSE, GCE, VCE and GNVQ Code of Practice, published annually by the regulatory authorities.

Scheme of assessment

The three units are equally weighted. Students must produce an internally-assessed portfolio for each of Units 2 and 3, and take an externally-assessed test for Unit 1.

Unit	Unit code	Weighting	Assessment
Unit 1: ICT Tools and Applications	5331	33.3%	**External assessment** A two and a half hour computer based examination.
Unit 2: ICT in Organisations	5332	33.3%	**Internal assessment** An investigation of how the hardware and software requirements of an organisation can be met. Report on the design and implementation of an ICT system.
Unit 3: ICT and Society	5333	33.3%	**Internal assessment** An investigation into how ICT affects and influences yourself and your local community.

Assessment objectives

There are three assessment objectives for GCSEs in Applied Information and Communication Technology. These detail the knowledge, skills and understanding that the student is required to demonstrate.

Students are required to demonstrate the following:

AO1	Capability in applying ICT purposefully and effectively in vocational contexts.
AO2	Ability to work independently to analyse needs and to design, implement, test, evaluate and document information and communications systems for use by others in vocational contexts.
AO3	Applied knowledge and understanding of the role and significance of ICT systems and methods in business, industry, the public sector and society.
AO4	Ability to reflect critically on their own use of ICT and on the way other individuals and organisations use ICT, including the social, economic, political, legal ethical, moral and environmental issues and security needs for information.

For this specification, the weightings for each assessment objective are:

	Unit 1	**Unit 2**	**Unit 3**	**Total for specification**
AO1	45 – 60%	10%	22%	26 – 31%
AO2	5 – 10%	55%	15%	25 – 27%
AO3	20 – 30%	20%	36%	25 – 29%
AO4	10 – 15%	15%	25%	17 – 18%

Grade descriptions

Grade descriptions for this subject are provided in *Appendix A* at the end of this specification. They indicate the level of attainment that is characteristic of grades A, C and F. The actual grade awarded to a student will depend in practice on the extent to which the student has met the assessment objectives overall. Shortcomings in some aspects of assessment may be balanced by better performance in others.

External assessment

Unit 1: ICT Tools and Applications is assessed by a computer-based examination which will take two and a half hours (excluding printing time). The examination is untiered and will be targeted at students across the ability range A*-G.

Internal assessment

Supervision of students and authentication of work submitted

Students must submit a portfolio of work for each of units 2 and 3. Teachers are expected to guide and advise students in the production of their portfolios. Teachers should monitor progress to ensure that the work is appropriate for the requirements of the specification. While some work, particularly in the early planning stages, may take place in groups, the input of the individual student should be clearly identified, and the judgements and conclusions reached must be their own. The GCSE, GCE, VCE and GNVQ Code of Practice requires that assessors record full details of the nature of any assistance given to individual students that is beyond that of the teaching group as a whole, but within the parameters laid down in this specification. The level of assistance should be taken into account when assessing students' work, as indicated in the guidance section that accompanies each internally-assessed unit in this specification. In addition, sufficient work must take place under direct supervision to allow the teacher marking the work to authenticate each student's work with confidence.

If students' practical skills are being assessed it is important that witness statements/checklists are completed by assessors to authenticate student work and provide evidence that students have achieved the level of performance required in the assessment grid.

Applying the mark bands

Portfolios will be marked by the centre, and externally moderated by Edexcel. Each of the internally assessed units has a marking grid, divided into three broad mark bands, showing how to award marks in relation to the task and the assessment objectives. The marking grids indicate the required assessment outcomes as well as the quality of the outcomes needed for achievement in each of the mark bands. Mark band 1 relates to the expectations given in the grade description for grade F; mark band 2 relates to the expectations for grade C, and mark band 3 relates to the expectations for grade A. For further information on grading, see the section *Grading and aggregation* on page 9.

In general terms, progression across the bands is characterised by:

÷ increasing breadth and depth of understanding

÷ increasing coherence, evaluation and analysis

÷ increasing independence and originality.

The unit marking grid shows the allocation of marks by assessment criterion and by mark band. This grid should be used to determine marks for student achievement in each unit. Students can achieve marks in different bands for each assessment objective. The total mark achieved will depend on the extent to which the student has met the assessment criteria overall.

Within each assessment criterion, it is a general principle that shortcomings in some aspects of the assessment requirements may be balanced by better performance in others. However it is also important to note that for full marks in any particular assessment criterion, all the requirements should have been met.

Marks should be awarded according to the criteria for each strand set out in the marking grid, and assessors should apply their professional judgement where relevant. The *Guidance for teachers* section in each unit gives specific details of how marks should be allocated.

There should be no reluctance to use the full mark range and if warranted assessors should award maximum marks. Students' responses should be considered positively. A mark of 0 should only be awarded where the student's work does not meet any of the required criteria.

Assessment objective 2 for GCSE Applied ICT refers to students' ability to work independently. All students are entitled to initial guidance in planning their work, but the level of assistance required should be taken into account when their work is assessed. In the marking grids, reference is made to students working with 'some support and guidance', with 'limited guidance' and 'independently'. When marking the work, assessors should apply the following guidelines:

- *'Some support and guidance':* The student has to be guided and advised throughout to ensure that progress is made. The student relies on the support of the teacher, who has to assist in most aspects of the work. This level of support restricts the student's mark to band 1, irrespective of the quality of the outcomes
- *'Limited guidance':* The teacher supports the student initially in the choice of topic for investigation. Thereafter the teacher reacts to questions from the student and suggests a range of ideas that the student acts upon. The student frequently checks matters of detail. The teacher needs to assist in some aspects of the work. This level of support restricts the student's mark to bands 1 or 2, irrespective of the quality of the outcomes
- *'Independently':* The teacher supports the student initially in the choice of topic for the investigation or task. Thereafter the teacher occasionally assists the student, and only when asked, but monitors progress throughout. This level of support gives access to all three mark bands.

For internal record-keeping purposes, centres may wish to make a copy of the marking grid for each student and use it to record the mark for that unit. The GCSE, GCE, GNVQ Code of Practice requires assessors to show clearly how credit has been assigned. Guidance on how this may be done will be included in the separate support material that will accompany this specification.

Standardisation and moderation

Where marking for this specification has been carried out by more than one assessor in a centre, there must be a process of internal standardisation carried out to ensure that there is a consistent application of the criteria laid down in the marking grids.

Marks awarded by the centre will be subject to external moderation by Edexcel. This is to ensure consistency with national standards. A sample of student portfolios will be examined, and marks will be adjusted where they are found to vary from the national standard. If the moderation process reveals an inconsistent application of the assessment criteria by centre assessors, Edexcel reserves the right to return the sample work in order for internal standardisation to be carried out.

External moderation will take place at the end of the course.

Availability of external assessment and moderation

	June 2003	January 2004	June 2004	January 2005	June 2005
Unit 1	✔	✔	✔	✔	✔
Unit 2	✙	✙	✔	✙	✔
Unit 3	✙	✙	✔	✙	✔

Grading and aggregation

The mark bands used for internal assessment do not relate to pre-determined grade boundaries. Following each examination and moderation series Edexcel will set the grade boundaries for the two internally-assessed units and the externally-assessed unit at an awarding meeting.

The raw mark boundaries will be converted to uniform marks on a scale of 0-100. The final grade for the qualification will be determined by aggregating the uniform marks for the three units. The following table gives details of the uniform mark scales (UMS) used for the units and for the qualifications.

Unit results

The minimum uniform marks required for each grade:

Unit grade	**A***	**A**	**B**	**C**	**D**	**E**	**F**	**G**
Maximum uniform mark = 100	**90**	**80**	**70**	**60**	**50**	**40**	**30**	**20**

Candidates who do not achieve the standard required for a grade G will receive a uniform mark in the range 0-19 and be recorded as U (unclassified).

Qualification results

The minimum uniform marks required for each grade:

Qualification grade	**A*A***	**AA**	**BB**	**CC**	**DD**	**EE**	**FF**	**GG**
Maximum uniform mark = 300	**270**	**240**	**210**	**180**	**150**	**120**	**90**	**60**

Candidates who do not achieve the standard required for a grade GG will receive a uniform mark in the range 0-59 and be recorded as U (unclassified).

Resits

Students may only resit each assessment component once prior to certification. Students may, however, retake the whole qualification more than once.

Individual assessment results, prior to certification of the qualification, have a shelf-life limited only by the shelf-life of the specifications when they are used to contribute to the qualification.

Students with particular requirements

Students with special requirements may require additional support, for example technical aids or specially devised or adapted methods of assessment, with additional time allowed if necessary.

Edexcel will assess whether special considerations or concessions can, or need to be, made for students with particular requirements. Requests should be addressed to:

Special Requirements
Edexcel
Stewart House
32 Russell Square
London WC1B 5DN

Language of assessment

Assessment of this specification will be available in English only. Assessment materials will be published in English only and all written and spoken work submitted for examination and moderation must be produced in English.

The wider curriculum

Key skills

This specification provides opportunities for developing and generating evidence for assessing the key skills listed below:

- application of number
- communication
- information technology
- improving own learning and performance
- problem solving
- working with others.

Appendices B and *C* in this specification map the opportunities available at Levels 1 and 2 respectively. Where appropriate, these opportunities should be directly cross-referenced, at specified level(s), to the criteria listed in Part B of the key skills specifications.

Spiritual, moral, ethical, social and cultural (SMESC) links

This specification provides opportunities for developing a range of spiritual, moral, ethical, social and cultural issues, together with citizenship, environmental issues and the European dimension. *Appendix E* maps the opportunities available.

Teacher support

There is a full range of support material designed for each GCSE in a vocational subject. The range includes:

- specimen tests and associated mark schemes
- sample materials for delivering the units – tutor support packs
- sample materials for assessing the internal units
- Chief Examiner reports
- the Edexcel website – www.edexcel.org.uk.

Edexcel delivers a full INSET programme to support these GCSEs. This includes generic and subject-specific conferences, seminars, workshops and customised events for individual centres.

Further information on INSET programmes can be obtained from Customer Services on 0870 240 9800.

Information concerning support material can be obtained from:

Edexcel Publications
Adamsway
Mansfield
Notts NG18 4FN

Tel: 01623 467467
Fax: 01623 450481
E-mail: publications@linneydirect.com

Unit 1: ICT Tools and Applications

ABOUT THIS UNIT

In this unit you will learn about the ICT tools and applications available and how those are used by different organisations. You will investigate how local businesses use ICT tools and applications, or you might use case study materials, or a mixture.

You will learn how to use a range of applications, including:

÷ word processing

÷ publications and presentation software

÷ spreadsheets

÷ databases

÷ multimedia

÷ web browsers and e-mail.

You will also learn how to use ICT tools and applications to:

÷ develop documents for different purposes

÷ find, store and manipulate data.

This unit will be assessed through an examination set and marked by Edexcel.

There will be one 2½-hour computer based examination. Pre-release material will be issued in advance of the examination, and questions will relate to this material.

Your result for this unit will be a mark from 0-100 which can be related to an equivalent grade.

WHAT YOU NEED TO LEARN

Using ICT applications

Different applications have different tools and facilities. You need to learn what needs are met by these kinds of application software and when and how to use their different features. You must be able to carry out the listed activities for each of the following applications:

Presentation of information using word processing, publications and presentation software

÷ enter, cut, copy, paste and move text

÷ format text eg justify, change font

÷ incorporate clip art/graphic images and tables

÷ make use of document formatting features eg headers, footers, bullet points

÷ use word wrapping facilities around images/objects

÷ use mail-merge facilities eg merging database data into a document.

Organisation and analysis of numerical information using spreadsheet software

- enter a range of data eg text, number
- format cells to match data types
- cut, copy, paste and move data between cells, rows and columns
- insert and delete rows and columns
- enter and replicate formulas
- use simple functions eg SUM, AVERAGE
- produce charts with labels eg axis titles, legends
- use relative and absolute cell references
- print selected areas.

Organisation and analysis of structured information using database software

- prepare database structure and validation rules for different data types eg text, currency, date
- enter data including use of data entry forms
- establish a relationship between fields in two tables
- search and sort including use of related tables
- produce reports showing the results of searches and sorts.

Organisation and presentation of information using multimedia software

- establish structure and navigation route through the presentation
- create and/or find the separate components of the presentation eg text files, images, sound files
- produce the individual frames/layers/backgrounds/slides
- combine the separate components to create a final presentation
- edit the separate components and the final presentation.

Communication, searching and selection of information using the internet

- use e-mail for communication between individuals and groups
- understand and apply the main search principles of internet search engines eg string
- searches, multiple criteria searches
- understand and apply the main features of browser software eg forward and back buttons, book marking and organising favourites
- navigate purposefully large websites eg locate a specific information resource in a given site.

Investigating how ICT is used in organisations

Having developed skills in a variety of applications, you must explore how and why the different applications can be used in different organisations. You need to understand that some organisations also use specific applications that:

- capture, manipulate and enhance graphic images
- automate and control processes including CAD/CAM
- monitor and record physical and environmental data for analysis and interpretation.

You must be able to identify why the type of application is appropriate for the organisation's purposes and what tools and facilities make it appropriate. For example, libraries use databases to track the location of books.

You must use a variety of information sources, including the internet, and acknowledge them.

Developing business documents

Organisations use a variety of documents to communicate with different audiences and pass on different types of information. You must look at a range of document layouts eg memos, letters, faxes, web pages, magazine layouts, interactive presentations, data capture forms, financial plans and database reports.

You must understand that to communicate effectively documents must be carefully planned and the following factors considered:

- purpose of the document
- target audience
- writing style and tone
- presentation style eg use of colour and images
- layout eg booklet, poster, website with frames
- accuracy, clarity and consistency eg error correction and use of house style.

It is important to remember that all these factors have an impact on the final design.

Having looked at a range of business documents, you should be able to use what you have learned when you are producing your own documents. Your documents must:

- meet their intended purpose
- be appropriate for their target audience
- take into account any other design considerations.

File management and standard ways of working

There are many reasons for having standard ways of working in ICT. The most important is that information in ICT systems can be easily lost or misused, and that having standard ways of working can help you to overcome these problems.

In your work with ICT, you must ensure that you:

- keep information secure eg from theft, loss, viruses, fire
- protect confidentiality eg prevent unauthorised access to documents or records
- respect copyright eg not using the work of others without permission
- save work regularly and use different filenames
- keep dated back-up copies of files in another location

- manage your work effectively eg use appropriate filenames and locations
- work safely eg use the correct position for the monitor and chair, avoid trailing cables, take regular breaks
- take account of relevant legislation and codes of practice.

GUIDANCE FOR TEACHERS

Teaching strategies

Preparation for external assessment

This unit is externally-assessed. There are, consequently, a number of strategies that teachers will need to consider when developing schemes of work and action plans.

The teaching strategies for externally-assessed units are likely to be very similar to those strategies for units that are assessed through portfolio evidence. Students will still need to be able to apply the skills, knowledge and understanding identified in the section *What you need to learn*. However, there are additional aspects to consider.

Teachers must ensure students are prepared for the external assessment. This will include familiarising students with the format and structure of the assessment. They should be clear about the rules and regulations of external assessments and they should also be reminded of the duration and aims of the assessment. In other words they should be well-rehearsed in the format and structure of external assessments.

Students should understand the terminology of assessment, for example describe, explain, evaluate. Teaching time should be allocated to support students with this. The external assessment aims to assess the student's vocational knowledge skills and understanding.

Teachers should be aware of marking schemes and their implications and students should practise effective time management for the external assessment.

The delivery of this unit should be planned with the availability of external assessment in mind to ensure that the student achieves the best possible grade reflecting their true potential.

Students need to be able to apply the knowledge, skills and understanding of the unit to the demands of the questions set. The ability to transfer knowledge, skills and understanding to different situations is an invaluable preparation for employment, training and further education. External assessment is one example where this transference is critical, for example coping with the controlled conditions of an external assessment, the imagined scenarios and responding to questions.

External assessment

Unit 1: ICT Tools and Applications is assessed by a computer-based examination which will take two and a half hours (excluding printing time). The examination is untiered and will be targeted at students across the ability range A*-G.

Pre-release materials will be provided in the autumn term.

The weighting of the external assessment is 33.3%.

The pre-release materials

The pre-release materials consist of a scenario and a collection of mixed-media resources (audio, video, hypertext). They will be released to students via the Edexcel website by 1 October each year. This pre-release material will be valid for the January and June examinations for that accademic year. It is recommended that students locate, select and download relevant material themselves. The materials will familiarise students with the context within which activities and tasks will be set in the examination.

A set of Teacher Guidance Notes accompanies the pre-release material and gives further information.

The examination

The examination is 2½ hours in duration and will sample the content of the unit, all parts of which will be tested over the life of the qualification.

The examination will require a computer workstation to be made available to each candidate on a 1:1 basis.

Each candidate also requires access to appropriate software and a printer.

Access to the internet is not required for the examination itself.

External assessment resources will be released on the Edexcel website four weeks ahead of the examination, to give centres the opportunity to download them in advance. When centres enter candidates for the examination, details will be provided of how the assessment resources can also be obtained on disc or via e-mail.

In order to overcome constraints on computer equipment, centres can 'stagger' the examination over a period of up to five days. It is permissible to timetable the examination for different groups of candidates at different times over the period of the examination window. Centres will be required to schedule the tests as late as possible within the window – eg if the number of candidates can be accommodated in one or two sitting, all candidates would have their examination on day 5. Centres requiring more sittings would use days 5, 4 and possibly 3, while the largest centres would use days 2 and 1 in addition.

A sample of centres will be selected for inspection during the test period. Before each series, those centres will be required to inform Edexcel of their test dates within the window.

Invigilation

The invigilator should, wherever possible, be an information technology teacher/lecturer or a member of the appropriate department.

Each page of work printed out must be clearly marked with the following details:

- the candidate's name
- the candidate's number
- the centre number
- the task number.

This may be conveniently achieved by using an appropriate footer. Candidates must always print out under the supervision of the invigilator. Where it is not possible to print candidate details on the printout, it is the centre's responsibility to ensure the correct candidate details are written on each printout.

Printing outside the time allowed for the examination is permitted. This may be carried out by the candidates themselves but only under the supervision of the invigilator.

Continuous stationery should be separated. Sprocket holes should be removed if possible.

All examination papers scripts/printouts and other examination materials, including any diskettes used, must be collected by the invigilator at the end of each session and stored in a secure place. Centres must also ensure that any draft copies of printouts are accounted for.

In addition, centres must implement the following:

÷ make additional supervision available, particularly where candidates use network computers

÷ issue fresh network passwords, immediately before the test.

Sample assessment material, together with mark schemes, is available to accompany this specification and, increasingly, past assessment material will also be available.

Resources

Books

÷ Doyle S – *Applied ICT GCSE – Student Resource Book* (Nelson Thornes, June 2002)

÷ Doyle S – *Applied ICT GCSE – Teacher Support Pack* (Nelson Thornes, June 2002)

÷ Heathcore P – *Applied GCSE ICT – Teacher Resource* (Payne Galway, 2002)

÷ Knott G and Waites N – *Applied GCSE ICT – On-line* (www.icteducation.info, May 2002)

÷ Wischhusen M, Snell J, Johnson J and Scales A – *GCSE in Applied ICT for Edexcel* (Heinemann, September 2002)

Unit 2: ICT in Organisations

ABOUT THIS UNIT

Most organisations use ICT in some aspects of their work. You might investigate how local businesses use ICT, or you might use case study materials, or a mixture.

In this unit you will learn about:

÷ how and why organisations use ICT

÷ the main components used to design an ICT system

÷ how ICT systems are designed.

You will learn how to design, implement and test a system and represent it graphically.

This unit will be internally assessed through a portfolio of evidence. Your result for this unit will be a mark from 0-100 which can be related to an equivalent grade.

WHAT YOU NEED TO LEARN

How and why organisations use ICT

ICT systems meet particular organisational needs. You need to learn how to identify the components used in an ICT system and describe their contribution to the overall purposes of the system. Organisations use ICT systems according to their needs. The needs of some organisations are met by the limited use of ICT. However, many organisations have a variety of needs that are met by extensive use of ICT systems.

For example, a video rental shop will use a database system to link customer records to video rental records. This means that, for example, fines can be calculated for late returns, video rental trends can be monitored and targeted mail shots can be produced.

ICT systems need clear and accurate information to be able to function effectively. You need to be able to describe the information requirements of a system. This will include broad characteristics such as information about production, sales and finances, as well as specific details such as data formats or sampling rates where appropriate. For example, the customer database for a video rental shop should include 'Date of Birth' information to prevent customers renting videos which they are not old enough to watch, and the detailed design should specify the format of the 'Date of Birth' field.

You need to understand that large organisations are often divided into departments that carry out the four main functions of business:

÷ sales – processing transactions involving the sale of goods or services provided by the organisation

÷ purchasing – processing transactions involving the purchase of goods or services required by the organisation

÷ finance – managing the flow of money in and out of the organisation

÷ operations – carrying out the main business of the organisation.

You must understand that departments communicate and exchange information with each other, and with external bodies such as customers and suppliers. You must also understand why and how organisations use ICT to:

÷ communicate effectively internally and with suppliers and customers

÷ manage and control a production process

÷ manage finance (payroll; budgeting/forecasting; transactions, reporting)

÷ manage stock control

÷ market products and services efficiently.

You will investigate how departments in an organisation use ICT to communicate and function effectively.

Main components

You must be able to identify and know the purpose and characteristics of the main hardware components of an ICT system including:

÷ input devices eg keyboard, mouse, scanner, bar code readers, sensors

÷ processors eg central processing unit (CPU)

÷ output devices eg screen, printer, speaker, motor

÷ ports and cables eg parallel, serial, universal serial bus (USB)

÷ storage devices eg RAM, hard drive, CD, DVD, floppy disk.

Some systems use additional devices, eg networked systems need network interface cards (NICs), and systems accessing the internet may use a modem or ASDL connection. You need to find out about network protocols and network services which are central to the movement of data within and between organisations.

You must learn how to match applications software to users' processing needs when designing ICT systems, including:

÷ word processing, publications and presentation

÷ spreadsheet

÷ database

÷ multimedia

÷ graphics

÷ control and monitoring.

You must understand that ICT systems often integrate features of more than one application to meet user needs.

How ICT systems are designed and implemented

You must learn how to design and implement an ICT system. To do this you must:

÷ identify the user requirements

÷ produce a design specification, including specifying information sources, input, process and output requirements, and the types of application software needed

÷ implement the system

÷ test the system under a range of conditions

- produce user documentation for the system
- evaluate the design and implementation of the system, by checking against user requirements, and making any necessary modifications and improvements.

The flow of information in an organisation can be represented using dataflow diagrams. These diagrams are often used when considering how an ICT system could solve an information processing problem in an organisation.

You must learn how to produce simple dataflow diagrams to give an overview of an ICT system.

Having investigated and understood the use of ICT in a range of organisations, you must be able to design and produce an ICT system for a given situation. The system might replace and update an existing ICT system, or it might replace an overloaded manual system.

ASSESSMENT EVIDENCE: UNIT 2: ICT IN ORGANISATIONS

You need to produce an investigation of an organisation (or a department in a large organisation) and compile a portfolio that includes a report on:

(a) the different purposes for which the organisation/department uses ICT

(b) the ICT system used in the organisation/department, and how it meets the needs identified in (a)

You also need to design and implement an ICT system. You must add to your portfolio:

(c) a design specification for the system including information sources, input, process and output requirements, and the types of application software needed

(d) evidence that you successfully implemented, tested and evaluated the system, together with guidance for the user.

Please note: You are expected to make full use of ICT in the production of your portfolio. Work that is entirely hand-written will not gain any marks.

ASSESSOR'S MARKING GRID (Please see also the section *Assessment guidance* on page 26.)

	Mark band 1 **At this level the student must:**	**Mark range**	**Mark band 2** **At this level the student must:**	**Mark range**	**Mark band 3** **At this level the student must:**	**Mark range**	**Mark awarded**
(a) **AO1,3,4** **10 marks**	÷ produce a report into the chosen organisation/department that identifies some purposes for which it uses ICT	1-4	÷ produce a report into the chosen organisation/department that details a range of purposes for which it uses ICT	5-7	÷ produce a report into the chosen organisation/department that gives full details of a wide range of purposes for which it uses ICT	8-10	
(b) **AO1,3,4** **14 marks**	÷ produce a report which describes the main hardware components used, together with some of the main applications software; give an indication their purpose	1-6	÷ produce a report which describes clearly the main hardware components used, together with the main applications software. Each should be linked to specific purposes	7-10	÷ produce a report which describes fully the main hardware components used, together with the necessary applications software, and some evaluation of how the system as a whole satisfies the purposes identified in (a)	11-14	

ASSESSOR'S MARKING GRID (Please see also the section *Assessment guidance* on page 26.)

	Mark band 1 **At this level the student must:**	**Mark range**	**Mark band 2** **At this level the student must:**	**Mark range**	**Mark band 3** **At this level the student must:**	**Mark range**	**Mark awarded**
(c) **AO1,2** **17 marks**	÷ work with support and guidance to produce a basic design specification showing a basic understanding of some of the input, process and output requirements; provide details of hardware and software needed	1-7	÷ work with limited guidance to produce a design specification with some detail showing a clear understanding of the main input, process and output requirements; provide details of hardware and software needed	8-12	÷ work independently to produce a detailed design specification which must show a creative and comprehensive understanding of input, process and output requirements; provide details of hardware and software needed	13-17	
(d) **AO1,2** **17 marks**	÷ work with support and guidance to produce evidence of successful implementation; results of some basic testing and evaluation; some basic user documentation for the system	1-7	÷ work with limited guidance to produce evidence of successful implementation; results of effective testing and evaluation; clear user documentation for the system	8-12	÷ work independently to produce evidence of successful implementation; results of detailed testing and evaluation; detailed user documentation for the system	13-17	
					Total Unit Mark	**58**	
					Student Unit Mark		

GUIDANCE FOR TEACHERS

Delivery strategies

The main focus of this unit is to enable students to understand how ICT systems are used within organisations. Some students will have used access to a PC at home or school but will have had little experience of how organisations use ICT. It is important that students are given sufficient guidance on the myriad ways that organisations can utilise their ICT systems. The range of organisations that allow access to students will vary. A supermarket will use ICT quite differently from a hospital, for example and students will need to know how and why this is the case. Contrasting two quite different organisations will allow the student to see the advantages of one system against the other and to make informed decisions when they begin to design their own system. Naturally, there is some commonality in the use of input, processing and output devices that will allow students to come to certain conclusions and it is expected that the similarities as well as the differences in the way ICT systems are used are highlighted by the student.

Students should be encouraged to contact several local organisations and arrange visits. But where this proves problematic, it will be up to the teacher to supply enough information about how organisations use ICT for the student to make informed judgements in order to meet all the evidence requirements of this unit. The more organisations that a student researches will allow students to make better decisions when they come to their own system design. Aspects such as cost, fitness for purpose, security and ease of use should all be considered in the investigation of the systems chosen.

Students will need to know and demonstrate how information flows within an organisation. The data flow diagrams they may produce for assessment need not follow an industry standard but give clear indication where the flow takes place and what type of information is being sent and received. It is expected that the data flow diagrams be produced using appropriate application software.

Students are also asked to design, test and implement an ICT system based on an investigation that you set them or one that they choose themselves. It is not expected that students install and test hardware components or install software but will be asked to design, test and implement a system using a suitable application package. Spreadsheet or database application packages are both suitable for this. Students will also need to show the flow of information using data flow diagrams. User documentation will also need to be produced written in a style that allows an end user to begin using the system without any other information.

Assessment guidance

This section should be read in conjunction with the general section *Applying the mark bands* on page 7.

Students are expected to make full use of ICT in the production of their portfolios. Work submitted need not be entirely ICT-derived, but any evidence that is entirely hand-written should not gain any marks.

The first part of the portfolio must be based on an investigation into a named organisation or department within an organisation. Students should be guided in their choice so that they do not investigate a very small organisation that has a very limited use or potential use of ICT, or try to understand the workings of a large organisation with a very diverse use of ICT.

The second part of the portfolio need not be based on the same organisation. It is important that a manageable project is chosen, and it is often more meaningful and appropriate for the student to design an ICT system for a small local organisation which might actually be able to implement it fully. Designing something for a large organisation may become unmanageable, and may have a theoretical value only. If a local community organisation is chosen, there are clear opportunities to make links with the content of *Unit 3*, for example.

Performance in mark band 1 can often be judged by point marking, but progression across the mark bands is generally achieved by an increase in the quality of the work, rather than by the student simply making more points. Characteristic qualities expected in the different mark bands are stated for each evidence requirement.

It is a general principle that a student may achieve some credit in band 1 for partial achievement of the evidence requirements, but to gain marks in bands 2 or 3 all aspects of the requirements must be met.

There are four items of evidence that the student should compile as part of his/her portfolio.

Evidence requirements

(a) the different purposes for which the organisation/department uses ICT (10 marks)

Mark band 1

Characterised by lists and simple but relevant statements. (1-4 marks)

÷ identification of the organisation/department chosen so that the reader is clear what its main function(s) are: 1 mark

÷ some key purposes are identified, covering information, communication and function as appropriate – for example a DIY superstore might use ICT 'to keep stock records up-to-date' or the accounts department of a company might need to send out invoices. For this mark band the information might be presented as a list or table:

. 1 mark: the student lists some relevant purposes but overlooks a few that are essential to the business

. 2 marks: the student lists or briefly states several purposes, including most of those which are essential to the organisation/department

. 3 marks: the student's list or table is categorised to show whether the purposes relate to information, communication or function

This band is also appropriate for the student who describes a few of the key purposes in detail appropriate for bands 2 or 3, but does not offer the range expected for those bands.

Mark band 2

Characterised by some detail of the purposes for which the chosen organisation or department uses ICT. (5-7 marks)

÷ a clear description of the work of the organisation/department, covering its main functions, together with other relevant information – perhaps the number of people working there or the amount of stock it keeps on the premises

÷ it is not the number of purposes that defines this level so much as the range. The range should give a fair representation of the variety of purposes for which the organisation or department uses ICT, and should cover information, communication and functional purposes

÷ the purposes should be developed rather than merely stated, perhaps by adding a reason. The DIY superstore, for example, might use ICT 'to keep stock records up-

to-date so that items can be automatically ordered when the stock falls below a certain level'. Alternatively some idea of the level of the demand might be added eg 'they need to produce 10,000 documents a day'

÷ if these aspects are fully achieved, award 7 marks; 5 or 6 marks are available for the student who does not explain one or two of the purposes and/or whose range does not cover one or two significant purposes.

Mark band 3

Characterised by full details of a wide range of purposes for which the chosen organisation/department uses ICT. (8-10 marks)

÷ the description of the organisation may be no more detailed than for band 2 – it is a greater understanding of the purposes for which ICT is used that is needed for this band

÷ the 'wide range' of purposes might not number many more than is offered for mark band 2; the key point is that it is representative of all the main purposes for which the organisation/department uses ICT

÷ the student must 'give full details of' the purposes by giving a well-stated reason. For example the DIY superstore might use ICT 'to keep stock records up-to-date so that items can be automatically ordered when the stock falls below a certain level. This means that the item should never be out of stock and so should lead to higher customer satisfaction'

÷ for full marks the student will have clearly described the chosen organisation/department, and identified all the relevant purposes for which the organisation or department uses ICT. All should be explained, and most should be fully explained. 8 or 9 marks are available for the student who explains most of the requirements, but has only partial detail for a few of them.

(b) a report on the ICT system of the organisation/department and how it meets the needs identified in (a) (14 marks)

Mark band 1

Characterised by lists and simple but relevant statements. (1-6 marks)

÷ a list of the principal hardware currently used in the organisation/department with no indication of purpose or associated software – 1 mark

÷ a list of some of the applications software currently used in the organisation/department with no indication of purpose – 1 mark

÷ tables showing hardware, software and purpose would be appropriate at this level. For full marks the 5 main component groups in the *What you need to learn* section must be covered. It is not necessary for every component to be linked to a purpose for full marks at this level, but at least 2 or 3 purposes should be linked to components

÷ any response which considers fewer than the 5 main component groups cannot get a response above mark band 1, no matter what its quality.

Mark band 2

Characterised by an understanding of the separate components and their purposes. (7-10 marks)

÷ there needs to be descriptive comment about some of the components to achieve credit in this mark band, with detail such as their capacity eg how much information can be stored, the speed at which documents can be printed

÷ the purposes for which the organisation/department uses ICT, as identified in (a), should be linked to relevant hardware and software. The different components may be looked at in isolation, but such an approach cannot receive credit beyond band 2

÷ if these aspects are fully achieved, award 10 marks; 7, 8 or 9 marks are available for the student who does not describe one or two of the components and/or who does not show how one or two of the needs are met.

Mark band 3

Characterised by an approach that considers how the components all work together as a system, and a clear understanding of how the system supports the needs of the chosen organisation/department. (11-14 marks)

÷ for a full description the student should make some descriptive comments about the system as a whole as well as about many of the various components

÷ in addition to making explicit links between the components and the purposes for which the organisation/department uses ICT, as identified in (a), there should be some evaluative comments about the extent to which the system meets those purposes eg 'The accounts department has to send out up to 10,000 invoices a day, and the capacity of the system is only just great enough'

÷ if these aspects are fully achieved, award 14 marks; 11, 12 or 13 marks are available for the student who does not offer any comments on the system as a whole and/or who offers only one or two simple evaluative comments.

(c) a design specification for an ICT system (17 marks)

(Please note that it is not necessary to construct the associated hardware.)

Mark band 1

Characterised by simple but workable designs for a basic project. (1-7 marks)

÷ any student who requires 'some support and guidance' in order to achieve this evidence requirement can be awarded of a maximum of 7 marks, even if the quality of the work fits the band 2 or 3 requirements. See the section on *Applying the mark bands* in the *Introduction for further guidance*.

÷ the purpose of the project is stated in basic terms, but there is not a full definition of its scope – eg 'a database to record details of all the customers of the local video shop'

. initial designs may not have enough information for the user to be clear about suitability

. final design covers input, processing and output, even if implicitly, but is unlikely to have sufficient detail for the solution to be repeated at a later date

. if a test plan is included, it is not effective for the main parts of the system

. if all the above requirements are met, 7 marks can be awarded. Lower marks within the range can be awarded for work which meets only some of the requirements.

Mark band 2

Characterised by a clear understanding of what is required for a design specification, with a proposal that produces workable designs for the project. (8-12 marks)

÷ any student who requires 'limited guidance' in order to achieve this evidence requirement can be awarded a maximum of 12 marks, even if the quality of the work fits the band 3 requirements. See the section on *Applying the mark bands* in the *Introduction for further guidance*

÷ the scope of the project should be clearly defined to include information about what is required – eg the video shop database would need to state more clearly exactly what information about the customers was needed, and whether there should be restricted access to any of the data

÷ initial designs should have enough information for the user to have an idea about suitability

÷ final designs should include basic details of input screens and output reports, and may include a context diagram (DFD0). There is sufficient detail for the student to implement the plan, but not a third party

÷ a test plan that is effective for the main parts of the system is included

÷ if all the above requirements are met, 12 marks can be awarded. Lower marks within the range can be awarded for work which goes beyond the band 1 requirements but meets only some of the requirements for band 2.

Mark band 3

Characterised by a creative approach to the project. (13-17 marks)

÷ students gaining credit in this mark band must have worked 'independently'. See the section on *Applying the mark bands* in the *Introduction for further guidance*

÷ the scope of the project should be defined at least as clearly as for mark band 2 – it is primarily the quality of the design that distinguishes this mark band

÷ initial designs are accurate enough for the user to judge their suitability

÷ final designs are likely to have been broken down into manageable sub-tasks, and are detailed enough for a third party to implement them effectively

÷ a test plan is included that will effectively test the whole system

÷ if all the above requirements are met, 17 marks can be awarded. Lower marks within the range can be awarded for work which goes beyond the band 2 requirements but meets only some of the requirements for band 3.

(d) implementation, testing and evaluation, together with user documentation

(14 marks)

Please note that evaluation is likely to have been carried out during the design stage in (c) as well, and credit should not be reserved just for evaluation carried out after implementation.

Mark band 1

Characterised by successful implementation which may be followed by basic testing and evaluation, together with user documentation that identifies the key aspects of the system. (1-7 marks)

÷ the success of the implementation may be evident from annotated hard copy. Alternatively witness statements provided by the tutor or customer can be submitted. The implemented project should fulfil at least most of the objectives, but may bear little resemblance to the design offered in (c)

÷ the student carries out some of the intended tests, but may not be able to make constructive use of the results

÷ 'limited' evaluation should go beyond the idea of 'If I had more time…' and include some simple comments that show some evaluation of the system itself – for example a recognition that it can only fulfil some of the requirements, or that the system works but is perhaps slow or has insufficient capacity

÷ the user documentation should be clear for an experienced user to understand, but may require an assumed level of knowledge to fill in the gaps.

For full marks all four aspects of the evidence should have been achieved. The student who does not address all four may be awarded up to 6 marks, depending on the quality of the responses. Lower marks in this level are also appropriate for the student who makes comments which are valid but not specifically related to the design specification – for example who describes the sort of tests that would be appropriate, but does not show evidence of having actually applied them.

Mark band 2

Characterised by effective testing appropriate for the system, together with some relevant evaluative comments. User documentation is appropriate for most users. (8-12 marks)

÷ the success of the implementation may be evident from annotated hard copy. Alternatively witness statements provided by the tutor or customer can be submitted. The implemented project should fulfil all its objectives, and should be based closely on the design offered in (c)

÷ most of the intended tests are carried out, and the student is able to make constructive use of some of the results

÷ for this mark band it is not necessary to evaluate the whole system, but there are likely to be two or three evaluative comments identifying strengths and weaknesses. For full marks, the student should have pointed out which areas particularly need improvement, although would not be expected to say how the improvement should be achieved

÷ the user documentation should be clear for someone who has used a similar system before.

Full marks in this band may be achieved for producing appropriate evidence that addresses all four aspects of the evidence, but it is also appropriate for the student who falls just short in some requirements, but over-achieves in others. Lower marks are

appropriate for the student who meets some of the requirements but falls a little short in others.

Mark band 3

Characterised by thorough testing and full evaluation. User documentation is appropriate for introducing a new user to the system. (13-17 marks)

- the success of the implementation may be evident from annotated hard copy. Alternatively witness statements provided by the tutor or customer can be submitted. The implemented project should fulfil all objectives, and conform to the design offered in (c)
- the intended tests are carried out and constructive use is made of the results where appropriate
- there should be an evaluation of the proposed system as a whole, even if on some occasions it is a short comment to confirm that a particular part of the system fully meets its requirements. Otherwise for full marks the student is likely to concentrate on the areas which could be improved, with a clear indication of how this part of the system falls short of requirements. There may be suggestions for improvement
- the user documentation should be clear and detailed enough for someone who is familiar with ICT, but who has not used a system like this before.

Full marks in this band may be achieved for producing appropriate evidence that addresses all four aspects of the evidence, but it is also appropriate for the student who falls just short in some requirements, but over-achieves in others. Lower marks are appropriate for the student who meets some of the requirements but falls a little short in others.

Resources

Books

- Doyle S – *Applied ICT GCSE – Student Resource Book* (Nelson Thornes, June 2002)
- Doyle S – *Applied ICT GCSE – Teacher Support Pack* (Nelson Thornes, June 2002)
- Heathcore P – *Applied GCSE ICT – Teacher Resource* (Payne Galway, 2002)
- Knott G and Waites N – *Applied GCSE ICT – On-line* (www.icteducation.info, May 2002)
- Wischhusen M, Snell J, Johnson J and Scales A – *GCSE in Applied ICT for Edexcel* (Heinemann, September 2002)

Unit 3: ICT and Society

ABOUT THIS UNIT

This unit helps you understand how far ICT systems affect everyday life. The unit explores how individuals as well as families, clubs and societies, work teams and community groups use ICT, in their personal, social and professional lives. Some individuals and groups do not have access to ICT, yet ICT still affects their lives.

New ICT products and applications are constantly being developed and the pace of development is very fast. You will explore how and why ICT can have negative as well as positive effects.

You will consider how developments in technology have influenced and may continue to influence areas, such as:

÷ business

÷ working styles and new employment opportunities

÷ legislation

÷ entertainment and leisure

÷ personal communications.

This unit builds on the contents of *Units 1* and *2*, and also your wider knowledge and experience of ICT.

This unit will be internally-assessed through a portfolio of evidence. Your result for this unit will be a mark from 0-100 which can be related to an equivalent grade.

WHAT YOU NEED TO LEARN

Available technologies

You will need to know about the wide variety of technology that is available to access and exchange information and carry out transactions. You will learn about:

÷ internet technologies eg World Wide Web, e-mail, multimedia, encryption

÷ internet connections eg modem, ISDN, ASDL, broadband

÷ mobile telephone technologies eg SMS, WAP

÷ digital broadcasting

÷ personal digital assistants (PDAs) and organisers

÷ storage media eg DVD, minidisk

÷ touch screen technologies.

You will also learn about the development of the specialised hardware and software associated with the above.

When investigating the effects ICT has had on different groups or contexts, you should also consider those who do not have access to ICT.

How ICT is used in business

You will need to understand how ICT has affected how all sectors of the economy do business and how in turn this affects customers, including the effect of the speed with which transactions can be done. For example:

- customers buying from home – on-line shopping and banking, comparing products and services such as travel, financial products, on-line auctions
- technical services, customised databases, security
- call centres and customer enquiries
- advertising and marketing.

How ICT has affected work styles

You will need to investigate how ICT has changed work styles. For example, you could investigate:

- the places in which people work – where people work, how business practice has changed
- people's work patterns – use of e-mail, mobile phones, laptops
- what ICT skills and training employees require – specialist ICT packages, new technology
- the way people interact at work – how does ICT affect communication between people eg using e-mails instead of talking directly to each other
- the types of jobs available – eg ICT has automated many 'traditional' jobs from office work to manufacturing, but has created other specialist jobs such as website designers, software and hardware engineers.

Despite many of the possibilities that ICT could offer, the changes are often less than predicted by ICT specialists.

Legislation

Legislation is enacted by Government to protect people from the harmful effects of ICT.

You should be aware of legislation that covers working with ICT, including:

- Data Protection Act (1998)
- Computer Misuse Act (1990)
- Copyright, Designs and Patents Act (1989)
- Health and Safety at Work Act (1974)
- Health and Safety Regulations (1992)
- Regulation of Investigatory Powers Act (2000).

You do not need to know the detail of the Acts or regulations, but you should understand the reasons for their introduction. You should understand who is affected by the legislation, what protection it offers and what aspect of using ICT is affected. You should also be aware of EU regulations on the use of computers and the Internet Code of Practice.

You should be aware that ICT has delivered many benefits, but that it has also created opportunities, for example, for:

- international fraud
- the misuse of personal information
- intrusion such as 'spam', chat rooms, viruses.

How ICT has affected personal communications

You will need to investigate how ICT has affected the way in which people go about their daily lives, for example:

The internet

- people have a wide range of products and services to choose from
- they have access to businesses all over the world
- they can buy products on-line easily and have access to a range of 'internet only' special offers.

Mobile phones

- contacting people 'on the move'
- personal security, including alerting emergency services
- the cost and ease of keeping in touch with others
- the use of WAP technology to access the internet
- disadvantages of mobile phone use – eg high tariffs, overuse, nuisance of using phones in public.

Entertainment and leisure

- the range of technologies available – eg DVD, CD ROM, Minidisk, MP3
- how the development of ICT is affected by the consumer's changing needs and tastes – eg more realistic computer games.

Education and lifelong learning

- access opportunities for people from varied locations
- the range of learning opportunities available
- access to up-to-date and comprehensive research materials.

How ICT is used in community activities

You will need to investigate how ICT is used in community activities, including:

- Cyber cafés and other public access points eg public libraries
- on-line discussion forums eg interest and pressure groups, lobbying
- information services eg museums, libraries, finding a venue
- public transport and travel information eg arranging itineraries
- satellite positioning systems used in outdoor pursuits eg sailing.

ICT and people with special/particular needs

There are large numbers of people who need to use ICT adapted to their particular needs, in order to have improved quality of life.

You will learn how ICT can offer improved access to those with:

÷ sensory impairment

÷ physical disability

÷ limited mobility

÷ learning difficulties

÷ language difficulties

÷ multiple disabilities.

You will investigate how ICT can enable people with special/particular needs to access and exchange information and carry out transactions, using standard technology, such as:

÷ vibrate alert telephones and pagers

÷ video conferencing.

÷ SMS

÷ on-line shopping.

You will investigate what specially-adapted ICT hardware and software is available, such as:

÷ incoming speech amplifiers and induction loops

÷ speech synthesisers and voice recognition systems

÷ environmental control systems.

The changes that ICT brings to this group in society mirrors changes that the industry brings to other user groups, such as schools and colleges, rural groups, and official agencies.

ASSESSMENT EVIDENCE: UNIT 3: ICT AND SOCIETY

You need to produce an investigation of how ICT systems affect everyday life. You must compile a portfolio with reports on the impact of ICT on:

(a) the way you do things at home and at school/college

(b) an adult in employment, including the way it has had an effect on his/her working style

(c) a person with special/particular needs

(d) your local community.

When investigating each of these different aspects of ICT use, you should consider:

(e) the legislation that protects individuals and groups from the misuse of ICT.

Please note: You are expected to make full use of ICT in the production of your portfolio. Work that is entirely hand-written will not gain any marks.

ASSESSOR'S MARKING GRID (Please see also the section *Assessment guidance* on page 39.)

	Mark band 1 **At this level the student must:**	**Mark range**	**Mark band 2** **At this level the student must:**	**Mark range**	**Mark band 3** **At this level the student must:**	**Mark range**	**Mark awarded**
(a) **AO4** **11 marks**	÷ describe some of the technologies used by the student at home and at school/college, with some indication of how these meet their needs	1-5	÷ describe a range of technologies used by the student at home and at school/college, with an explanation of how these meet their needs	6-8	÷ describe a wide range of technologies used by the student at home and at school/college, with an evaluation of the extent to which these meet their needs	9-11	
(b) **AO1,2,3** **14 marks**	÷ describe some of the technologies used by an adult in employment, with some identification of how these meet their needs and have affected working styles	1-6	÷ describe a range of technologies used by an adult in employment, with an explanation of how these meet their needs and have affected working styles	7-10	÷ describe a wide range of technologies used by an adult in employment, with an evaluation of the extent to which these meet their needs and have affected working styles	11-14	

ASSESSOR'S MARKING GRID (Please see also the section *Assessment guidance* on page 39.)

	Mark band 1 At this level the student must:	Mark range	Mark band 2 At this level the student must:	Mark range	Mark band 3 At this level the student must:	Mark range	Mark awarded
(c) **AO1,2,3** **11 marks**	÷ describe some of the technologies used by a person with special or particular needs, with some identification of how these meet their needs	1-5	÷ describe a range of technologies used by a person with special or particular needs, with an explanation of how these meet their needs	6-8	÷ describe a wide range of technologies used by a person with special or particular needs, with an evaluation of the extent to which these meet their needs	9-11	
(d) **AO1,2,3** **11 marks**	÷ describe some of the technologies used in the local community, with some identification of how these meet local needs	1-5	÷ describe a range of technologies used in the local community, with an explanation of how these meet local needs	6-8	÷ describe a wide range of technologies used in the local community, with an evaluation of the extent to which these meet local needs	9-11	
(e) **AO3,4** **11 marks**	÷ indicate some of the relevant legislation and how it protects people and groups from the misuse of ICT	1-5	÷ describe the most relevant legislation, why it was introduced and how it protects people and groups from the misuse of ICT	6-8	÷ describe all relevant legislation and why it was introduced, and an evaluation of the extent to which it protects people and groups from the misuse of ICT	9-11	
					Total Unit Mark	**58**	
					Student Unit Mark		

GUIDANCE FOR TEACHERS

Delivery strategies

This unit helps students to understand the impact of ICT systems on everyday life. Students will be required to carry out a number of investigations into the needs of individuals and organisations and reflect on the impact that ICT has made on them.

For example, students can investigate the use of ICT within a community-based group such as a local youth club, sports group or a fund-raising group. The investigation will look at the ways these groups operated before using ICT, what impact the new technology has on current operations plus, where feasible, the likely impact future technology would make on the operation of the groups investigated.

When investigating technology that aids those with special and particular needs, the students can look at a particular technology such as touchscreens and voice activation and how the technology improves their quality of life and their ability to communicate effectively.

When investigating an adult in employment, students should look at the range of ways that the adult uses ICT in his/her daily life, and should not restrict the investigation to the use of ICT in the workplace.

It would be helpful if students were to investigate how legislation affects people's use of ICT as part of the investigations outlined above. Issues include software licensing, copyright, pornography, and file exchange. Further, students need to investigate the impact of legislation on organisations use of ICT eg administration and operation of networks, e-mail as well as the more obvious health and safety issues.

Students must select and use appropriate ICT methods throughout their assessment in the investigation stages and in their findings. A wide range of presentation techniques can be adopted suitable to each student's own choice of organisation to investigate, and evidence may take the form of leaflets, reports, posters, presentations. Students should be encouraged to participate in group discussion to share their findings at the investigation stage.

Assessment guidance

This section should be read in conjunction with the general section *Applying the mark bands* on page 7.

Students are expected to make full use of ICT in the production of their portfolios. Work submitted need not be entirely ICT-derived, but any evidence that is entirely hand-written should not gain any marks.

The portfolio must be based on a series of investigations involving a number of individuals and groups. There is great scope for diversity within a class of students, who should between them be able to work with a wide range of different people and groups. It is important that students are guided and supported in their choices so that their investigations cover personal, social and professional uses of ICT and include an appropriate range of available technologies (including personal communications) from the *What you need to learn* section.

For evidence requirement (d), impact in the local community, students can choose to look in detail at the impact of ICT on one community activity, or could look at the way different community activities use ICT differently.

There are two ways to approach the last part of the evidence requirements in the banner. Students can either include a separate section covering aspects of legislation relating to ICT, or they may prefer to include the most relevant legislation as they consider each of the different

individuals and groups they will be investigating. It is not necessary to go beyond the legislation stated in the *What you need to learn* section.

Performance in mark band 1 can often be judged by point marking, but progression across the mark bands is generally achieved by an increase in the quality of the work, rather than by the student simply making more points. Characteristic qualities expected in the different mark bands are stated for each evidence requirement.

It is a general principle that a student may achieve some credit in band 1 for partial achievement of the evidence requirements, but to gain marks in bands 2 or 3 all aspects of the requirements must be met.

There are five items of evidence that the student should compile as part of his/her portfolio.

Evidence requirements

(a) the impact of ICT on the student's activities at home and at school/college
(11 marks)

Mark band 1

Characterised by lists and simple but relevant statements. (1-5 marks)

- ÷ a simple unstructured list/table of the technologies used – 1 mark
- ÷ a list/table that categorises a number of personal and social uses at home and at school/college – 2 marks for one categorisation eg personal/social, 3 marks for both ie social/personal and home/school/college
- ÷ to achieve the higher marks in this band the student must indicate how some of these uses meet his/her needs. This could be an additional column in the table, or by separate descriptive comment – 'I text my mates loads of times each day to plan where we will go in the evening.' Two or three such comments together with a well structured list/table would be worth full marks in this band.

Mark band 2

Characterised by a range of personal/social and home/school/college uses, and some explanation of how the technologies meet the student's needs (6-8 marks)

- ÷ it is not the number of uses that defines this level so much as the range. The range should give a fair representation of the variety of uses the student has for ICT
- ÷ there must be some explanation of how the technologies meet the student's needs – not just 'I use the internet,' but 'I use the internet to research information for my ICT GCSE because we have to investigate…'
- ÷ one good explanatory comment together with a clear range of uses is enough to take the mark into the lower end of band 2. For full marks in this band there must be at least one well-explained comment about each of personal, social, home and school/college use.

Mark band 3

Characterised by a wide range of personal/social and home/school/college uses, and some evaluation of the extent to which the technologies meet the student's needs (9-11 marks)

- ÷ the 'wide range' of uses might not number many more than is offered for mark band 2; the key point is that it is representative of all the main uses the student has for ICT in his/her personal, social, home and school/college life

÷ there should be some evaluation of the extent to which the technologies meet the student's needs – not just 'I use the internet to research information for my ICT GCSE because we have to investigate…..' but '…however there is some information, such as... that can only be obtained by asking questions directly to the people involved.'

÷ one good evaluative comment together with a wide range of uses is enough to take the mark into the lower end of band 3. For full marks in this band there must be at least one evaluative comment about each of personal, social, home and school/college use.

(b) the impact of ICT on an adult in employment, including the effect on working style (14 marks)

Mark band 1

Characterised by lists and simple but relevant statements. (1-6 marks)

÷ a simple unstructured list/table of the technologies used – 1 mark

÷ a list/table that categorises a number of professional, personal and social uses at home and at work – 2 marks for one categorisation, 3 marks for both

÷ to achieve higher marks in this band the student must indicate how some of these uses meet the adult's needs. This could be an additional column in the table, or by separate descriptive comment – 'I used the internet at home to book a holiday.'

÷ there also needs to be some comment on the effect on working styles – 'I used to go and visit clients regularly, now I do it by e-mail.'

÷ three or four comments covering at least one need and one change to working practices together with a well-structured list/table would be worth full marks in this band.

Mark band 2

Characterised by a range of professional/personal/social and home/work uses, and some explanation of how the technologies meet the adult's needs and have changed their working practices. (7-10 marks)

÷ it is not the number of uses that defines this level so much as the range. The range should give a fair representation of the variety of uses the adult has for ICT

÷ there must be some explanation of how the technologies meet the adult's needs – not just
'I used the internet to book a holiday,' but 'I used the internet to book a holiday because it is cheaper than…'

÷ there also needs to be some explanatory comment on working practices – for example
'I used to visit clients at least once a month, but with e-mail I can keep in contact more often and deal with more clients.'

÷ one good explanatory comment about either use or working practices together with a clear range of uses is enough to take the mark into the lower end of band 2. For full marks in this band there must be at least one well-explained comment about each of professional, personal, social, home and work use.

Mark band 3

Characterised by a wide range of professional/personal/social and home/work uses, and some evaluation of the extent to which the technologies meet the adult's needs (11-14 marks)

÷ the 'wide range' of uses might not number many more than is offered for mark band 2; the key point is that it is representative of all the main uses the adult has for ICT in his/her professional/personal, social, home and work life

÷ there should be some evaluation of the extent to which the technologies meet the adult's needs – not just 'I used the internet to book my holiday because it is cheaper than…' but '…and I was able to make the booking at home in the evening – I would not have time to visit a travel agent during the day.'

÷ one good evaluative comment about either use or working practices together with a wide range of uses is enough to take the mark into the lower end of band 3. For full marks in this band there must be at least one evaluative comment about each of professional, personal, social, home and work use.

(c) the impact of ICT on a person with special/particular needs (11 marks)

Mark band 1

Characterised by lists and simple but relevant statements (1-5 marks)

÷ a clear indication of the person's special/particular needs – 1 mark

÷ a simple unstructured list/table of the technologies used – 1 mark

÷ a list/table that categorises a number of personal and social (and possibly professional) uses – 2 marks

÷ to achieve higher marks in this band the student must indicate how some of these uses meet the person's needs. This could be an additional column in the table, or by separate descriptive comment – 'I use a Braille keyboard because I can't see the letters on an ordinary one.'

÷ three or four such comments together with a well-structured list/table would be worth full marks in this band.

Mark band 2

Characterised by a range of personal/social and possibly professional uses, and some explanation of how the technologies meet the person's needs. (6-8 marks)

÷ it is not the number of uses that defines this level so much as the range. The range should give a fair representation of the variety of uses the adult has for ICT

÷ there must be some explanation of how the technologies meet the adult's needs – not just 'I use a Braille keyboard because I can't see the letters on an ordinary one,' but 'The Braille characters on the keyboard mean I can feel what they are, even if I can't see them…'

÷ one good explanatory comment together with a clear range of uses is enough to take the mark into the lower end of band 2. For full marks in this band there are likely to be at least three well-explained comments covering personal and social (and possibly professional) uses.

Mark band 3

Characterised by a wide range of personal/social and possibly professional uses, and some evaluation of the extent to which the technologies meet the person's needs. (9-11 marks)

÷ the 'wide range' of uses might not number many more than is offered for mark band 2; the key point is that it is representative of all the main uses the person has for ICT in his/her personal and social and possibly professional life

÷ there should be some evaluation of the extent to which the technologies meet the person's needs – not just 'The Braille characters on the keyboard mean I can feel what they are, even if I can't see them…' but 'however it takes a longer time to type, and so I am thinking of getting voice recognition software instead.'

÷ one good evaluative comment together with a wide range of uses is enough to take the mark into the lower end of band 3. For full marks in this band there are likely to be at least three evaluative comments covering personal and social (and possibly professional) uses.

(d) the impact in the local community (11 marks)

Mark band 1

Characterised by lists and simple but relevant statements. (1-5 marks)

÷ a clear indication of the community activity or activities investigated – 1 mark

÷ a simple unstructured list/table of the technologies used – 1 mark

÷ a list/table that categorises a number of uses in the community – 2 marks

÷ to achieve the higher marks in this band the student must indicate how some of these uses meet the identified community needs. This could be an additional column in the table, or by separate descriptive comment – 'Classes are held at the public library on how to use the internet.' Two or three such comments together with a well structured list/table would be worth full marks in this band.

Mark band 2

Characterised by a range of uses, and some explanation of how the technologies meet community needs. (6-8 marks)

÷ it is not the number of uses that defines this level so much as the range. The range should give a fair representation of some of the uses the local community makes of ICT

÷ there must be some explanation of how the technologies meet community needs – not 'Classes are held at the public library on how to use the internet,' but 'this gives people new skills and helps them find work.'

÷ one good explanatory comment together with a clear range of uses is enough to take the mark into the lower end of band 2. For full marks in this band there are likely to be at least three well-explained comments.

Mark band 3

Characterised by a wide range of uses, and some evaluation of the extent to which the technologies meet community needs. (9-11 marks)

÷ the 'wide range' of uses might not number many more than is offered for mark band 2; the key point is that it is representative of several main uses the local community makes of ICT

÷ there should be some evaluation of the extent to which the technologies meet community needs – not just 'Classes are held at the public library on how to use the internet,' but 'the only problem is they are for unemployed people only, so not everyone has access to them.'

÷ one good evaluative comment together with a wide range of uses is enough to take the mark into the lower end of band 3. For full marks in this band there are likely to be at least three evaluative comments.

(e) the legislation protecting people and groups (11 marks)

Please note – this need not be a separate section, and evidence may be found throughout the portfolio.

Mark band 1

Characterised by lists and simple but relevant statements. (1-5 marks)

÷ legislation is likely to be referred to by its title, with a broadly accurate indication of how it protects people or groups – 'The Data Protection Act means that somebody cannot store someone else's personal information without a good reason.'

÷ there is no credit for stating the legislation – there must be an indication of its purpose

÷ in this band, the response could be point marked – one mark for each item of legislation linked to a person group and its purpose indicated. It is possible to double credit an item of legislation if a different purpose is identified, but not if the same purpose is applied to different groups.

Mark band 2

Characterised by an identification of the legislation which is most relevant, and some idea of why it was introduced. (6-8 marks)

÷ there should be some description of the legislation that shows a more precise understanding than that suggested for band 1, including the need for that legislation

÷ for full marks, each person or group investigated for (a) to (d) above should be linked to the legislation which is most relevant to them. Marks lower in the band can be allocated to the student who does not have sufficient description for one or two items of legislation.

Mark band 3

Characterised by some evaluation of the legislation (9-11 marks)

÷ the description of the legislation need not be more detailed than that for band 2, but the range of legislation is likely to be more comprehensive

÷ there should be some evaluation of the extent to which the legislation is effective or appropriate

÷ one good evaluative comment together with some description of a range of legislation and why it is needed is enough to take the mark into the lower end of band 3. For full marks in this band there are likely to be at least three evaluative comments.

Resources

Books

- Doyle S – *Applied ICT GCSE – Student Resource Book* (Nelson Thornes, June 2002)
- Doyle S – *Applied ICT GCSE – Teacher Support Pack* (Nelson Thornes, June 2002)
- Heathcore P – *Applied GCSE ICT – Teacher Resource* (Payne Galway, 2002)
- Knott G and Waites N – *Applied GCSE ICT – On-line* (www.icteducation.info, May 2002)
- Wischhusen M, Snell J, Johnson J and Scales A – *GCSE in Applied ICT for Edexcel* (Heinemann, September 2002)

Appendices

Appendix A – Grade descriptions

The following grade descriptions indicate the levels of attainment characteristic of the given grade for both GCSEs and the GCSE Double Award in ICT. They give a general indication of the required standard at each specified grade. The descriptions should be interpreted in relation to the content and assessment evidence requirements outlined in the specification; they are not designed to define that content. For GCSE Double Awards the skills, knowledge and understanding must be applied in vocationally-related contexts and this will generally include a greater degree of involvement with ICT practice beyond the educational environment. The grade awarded will depend in practice upon the extent to which the candidate has met the assessment evidence requirements overall. Shortcomings in some aspects of the assessment may be balanced by better performances in others.

Grade F

Students show a basic knowledge of familiar, simple information processing and communication applications and of the techniques and systems needed to support them. They show knowledge of some of the basic ICT terms and definitions. They respond to needs and opportunities and evaluate ways of addressing these using information and communication systems. They understand the need for precision in framing questions when finding, selecting and collecting information. They use ICT to explore, develop and interpret information, and they develop, test and modify sets of instructions to automate processes and to make things happen. They use computer models to detect patterns and relationships and use ICT to share, exchange and present work and demonstrate how it contributes to the development of their ideas. They reflect on their use of ICT and show some knowledge of its use in the wider world.

Grade C

Students show some knowledge and understanding of the range and scope of information processing and communication applications and of the techniques and systems, including the software and hardware sub-systems, needed to support them. They show a good grasp of basic ICT terms and definitions and are able to contrast and compare related ideas. They identify needs and opportunities and analyse, design and evaluate appropriate ways of addressing these using information and communication systems. They use complex lines of enquiry to find and select information, using a wide range of sources, and they explore, develop and interpret information to carry out a range of tasks and produce appropriate solutions to problems. They show awareness of efficiency and economy in developing, testing and refining sets of instructions to automate processes and to make things happen, including responding to external events. They use computer models to investigate and test hypotheses, and use ICT to share, exchange and present work, demonstrating a consideration of audience and purpose. They show awareness of the need to detect the loss or corruption of information and to prevent the abuse of personal information. They reflect critically on their use of ICT and consider the effects of its use in the wider world.

Grade A

Students show a good knowledge and understanding of the range and scope of information processing and communication applications and of the techniques and systems, including the software and hardware sub-systems, needed to support them. They use ICT terms and definitions appropriately and are able to contrast and compare related ideas. They apply general principles of information processing to given situations and abstract general principles from given examples. They identify a range of needs and opportunities, carry out systematic analysis, and design and evaluate effective ways of using information and communication systems. They evaluate information sources, software packages and computer models, analysing the situations for which they were developed and assessing their efficiency, appropriateness and ease of use. They use complex lines of enquiry to find and select information, using a wide range of sources. They explore, develop and interpret information to carry out a range of tasks and produce

effective working solutions to a range of problems, including designing and implementing systems for others to use. They show efficiency and economy in developing, testing and refining sets of instructions to automate processes and to make things happen, including responding to external events. They use and develop computer models to investigate and test hypotheses, and use ICT to share, exchange and present work, demonstrating a clear sense of audience and purpose. They discuss methods of detecting the loss or corruption of information and describe steps which can minimise the likelihood of the abuse of personal information. They reflect critically on their use of ICT and show understanding of the effects of its use in the wider world.

Appendix B – Links with Edexcel GCSE ICT (1185/3185)

Comparative analysis of topic coverage in the Edexcel GCSE Applied ICT and Edexcel GCSE ICT 1185 (and short course) 3185)		
A = GCSE Applied ICT	**G = GCSE (1185)**	
Unit 1	**Learning outcomes G**	**Coursework (including any specific coursework problem types, in addition to Free Choice topic option). G.**
ICT Tools and Applications Concept – appropriate use of ICT applications Presentation of information using word processing, publications and presentation software	5, 14, 19, 22	'Word-processing' and 'DTP' – optional coursework problem types
Organisation and analysis of numerical information using spreadsheet software	5, 10, 14, 19	'Creation and Manipulation of a Spreadsheet' – mandatory coursework problem type
Organisation and analysis of structured information using database software	7, 11, 14, 19, 21	'Creation and Manipulation of a Database' – mandatory coursework problem type
Organisation and presentation of information using multimedia software	14, 19	'Multimedia' – optional coursework type
Communication, searching and selection of information using the internet	19, 36, 37, 38	'Website Publishing' – optional coursework problem type
Investigating how ICT is used in organisations	16, 18	Possibly, depending on the topic tackled for any particular problem type
Developing business documents	5, 6, 13, 15, 17, 19, 21, 22	Possibly, depending on the topic tackled for any particular problem type
File management and standard ways of working	3, 8, 9, 10, 11, 15, 18, 23	Inherent to all coursework problem types
Unit 2	**Learning outcomes**	**Coursework (including any specific coursework problem types, in addition to Free Choice topic option)**
ICT in Organisations Concept – how ICT systems are used in the real world, with a mind to designing, implementing and testing a system How and why organisations use ICT	5, 6, 8, 13, 15, 18, 20, 21, 23, 29, 30, 31, 33	Inherent to any coursework topic where the student focuses on the implementation of an ICT solution in a business environment

Comparative analysis of topic coverage in the Edexcel GCSE Applied ICT and Edexcel GCSE ICT 1185 (and short course) 3185)		
A = GCSE Applied ICT	**G = GCSE (1185)**	
Main components (of an ICT system)	1, 2, 3, 8, 10, 15, 25, 29, 30, 31, 32, 35, 37	In all coursework topics, students must demonstrate a sound awareness of the hardware components required in their ICT solution.
How ICT systems are designed and implemented	4, 5, 6, 7, 9, 10, 11, 12, 14, 15, 16, 18, 19, 20, 23, 25, 26	Inherent to all coursework topics – the aim of all of which is to design, implement and document an ICT response to a problem
Unit 3	**Learning outcomes**	**Coursework (including any specific coursework problem types, in addition to Free Choice topic option)**
ICT and Society Concept – how ICT affects everyday life, socially and professionally: negatively as well as positively Available technologies	1, 5, 6, 8, 18, 19, 23, 25, 26, 28, 30, 31, 32, 33, 35, 36, 37, 38	Possibly, depending on the topic tackled for any particular problem type
How ICT is used in business	6, 18, 23, 33, 36, 37	Possibly, depending on the topic tackled for any particular problem type
How ICT has affected work styles	19, 23, 24	Possibly, depending on the topic tackled for any particular problem type
Legislation	24, 38	Possibly, depending on the topic tackled for any particular problem type
How ICT has affected personal communications – internet, mobile phones, entertainment and leisure, education and lifelong learning	18, 23, 24, 38	Possibly, depending on the topic tackled for any particular problem type
How ICT is used in community activities	24, 37	Possibly, depending on the topic tackled for any particular problem type
ICT and people with special/particular needs.	23, 24, 37	Possibly, depending on the topic tackled for any particular problem type

Appendix C – Key skills mapping – Level 1

Key:		
	✔	The unit contains clear opportunities for generating key skills portfolio evidence.
	✻	The unit contains opportunities for developing the key skill, and possibly for generating portfolio evidence if teaching and learning is focused on that aim.
	✘	There are no obvious opportunities for the development or assessment of the key skill in the unit.

Key skill	**GCSE unit**	**Examples of opportunities for developing the key skill or for generating key skills portfolio evidence** NB: These are illustrative only.	
N1.1 Interpret straightforward information from **two** different sources. At least one source should be a table, chart, diagram or line graph.	Unit 1	✘	
	Unit 2	✻	Designing ICT systems which match user needs may involve interpreting and manipulating simple numerical data about eg customers and the flow of information.
	Unit 3	✘	
N1.2 a Carry out straightforward calculations to do with amounts and sizes.	Unit 1	✻	Calculating simple functions in spreadsheets eg SUM, AVERAGE etc.
	Unit 2	✘	
	Unit 3	✘	
N1.2 b Carry out straightforward calculations to do with scales and proportion.	Unit 1	✘	
	Unit 2	✘	
	Unit 3	✘	
N1.2 c Carry out straightforward calculations to do with handling statistics.	Unit 1	✘	
	Unit 2	✘	
	Unit 3	✘	
N1.3 Interpret the results of your calculations and present your findings. You must use **one** chart and **one** diagram.	Unit 1	✻	Organising numerical information using spreadsheet software may involve some manipulation of data, and presentation in a variety of forms will be possible.
	Unit 2	✘	
	Unit 3	✘	

Key skill	GCSE unit	Examples of opportunities for developing the key skill or for generating key skills portfolio evidence NB: These are illustrative only.	
C1.1 Take part in a **one-to-one** discussion and a **group** discussion about different straightforward subjects.	Unit 1	✘	
	Unit 2	✻	Investigating how departments in an organisation use ICT, finding out about network protocols and services, and identifying user requirements before and after designing an ICT system. Discussions might be with IT or other personnel or as part of a group investigation of an organisation.
	Unit 3	✻	Discussions as part of a group or with individuals on what the development of new ICT has meant for individuals, communities, businesses etc.
C1.2 Read and obtain information from **two** different types of documents about straightforward subjects, including at least **one** image.	Unit 1	✘	
	Unit 2	✻	Network protocols, company reports showing the functions of different departments, case study material, textbooks, etc.
	Unit 3	✻	Literature from technology companies eg brochures from mobile phone company, on-line banks, ISPs etc, newspaper supplements/articles, textbooks, etc.
C1.3 Write **two** different types of documents about straightforward subjects. Include at least one image in one of the documents.	Unit 1	✘	
	Unit 2	×	Reporting on the information requirements of a system (which could be supported by data-flow diagrams), producing a design specification for an ICT system, describing components, reporting how an organisation uses ICT etc.
	Unit 3	✻	Reporting on investigations of the variety of technology used to exchange information and carry out transactions, and about related hardware and software. These would readily be supported by diagrams. Reporting on how ICT has changed working styles, personal communications etc.
WO1.1 Confirm what needs to be done to achieve given objectives, including your responsibilities and working arrangements.	Unit 1	✘	
	Unit 2	✻	Investigating information flow and the use of ICT in an organisation, or designing an ICT system lend themselves to group activities where methods and objectives for the group are set and individual responsibilities for researching different aspects given. Could fulfil the group-working requirement for this key skill.
	Unit 3	✻	Investigating available technologies and the effects of ICT on personal communications, working practices, communities etc as group activities, in which responsibility for researching different aspects might be given to individuals. Could fulfil the group-working requirement for this key skill.

Key skill	GCSE unit	Examples of opportunities for developing the key skill or for generating key skills portfolio evidence NB: These are illustrative only.	
WO1.2 Work with others towards achieving given objectives, carrying out tasks to meet your responsibilities.	Unit 1	✘	
	Unit 2	×	Designing an ICT system requires the identification of user requirements and the development of a system that matches them. Working with the user would give an opportunity for one-to-one working. This could also feed into group-working on the overall design.
	Unit 3	✻	Individuals may be given their own responsibilities eg to find out about how work practices in an organisation have changed since the introduction of ICT. Carrying out individual tasks safely and effectively, asking for help and supporting other members of the team. Working in pairs could fulfil the one-to-one working requirement for this key skill.
WO1.3 Identify progress and suggest ways of improving work with others to help achieve given objectives.	Unit 1	✘	
	Unit 2	✻	If group-working is planned in such a way as to allow discussion of progress, identifying eg ways to meet user requirements, ideas for user documentation etc, as well as problems and how they were dealt with, with a view to suggesting better ways of working together.
	Unit 3	✘	
LP1.1 Confirm understanding of your short-term targets and plan how these will be met, with the person setting them.	Unit 1	✘	
	Unit 2	✻	If the group's work is planned to allow an appropriate person to set individual targets for work on designing and implementing an ICT system and also identify action points, deadlines, arrangements for reviewing progress, and who to ask for help.
	Unit 3	✘	
LP1.2 Follow your plan, using support given by others to help meet targets. Improve your performance by: ÷ studying a straightforward subject ÷ learning through a straightforward practical activity.	Unit 1	✘	
	Unit 2	✻	If the student follows the plan for designing the system agreed in LP1.1, seeking support where necessary, and uses different approaches to learning, including a practical activity such as testing the system as it is being developed, consulting manuals or experts etc. Also acting on suggestions for improvements.
	Unit 3	✘	

Key skill	GCSE unit	Examples of opportunities for developing the key skill or for generating key skills portfolio evidence NB: These are illustrative only.	
LP1.3 Review your progress and achievements in meeting targets, with an appropriate person.	Unit 1	✘	
	Unit 2	✻	Reviewing what has been learned and how they went about it, on a one-to-one basis eg in tutorials, with encouragement to identify good work and bad, with suggestions for improvements.
	Unit 3	✘	
PS1.1 Confirm your understanding of the given problem with an appropriate person and identify **two** options for solving it.	Unit 1	✘	
	Unit 2	×	With support from an appropriate person or people, confirming the nature of the task of designing an ICT system using given information and identifying possible problems eg that the system will not meet a certain requirement of the user. Also coming up with possible solutions, such as consulting a manual or a tutor.
	Unit 3	✘	
PS1.2 Plan and try out at least **one** option for solving the problem, using advice and support given by others.	Unit 1	✘	
	Unit 2	×	With support from an appropriate person or people, planning how the design specification might be developed such that the solution meets user requirements. Identifying tasks and resources and proceeding, tackling any problems arising during the design process and seeking advice and help as necessary. Also applies when implementing the specification and making any adjustments that become necessary.
	Unit 3	✘	
PS1.3 Check if the problem has been solved by following given methods and describe the results including ways to improve your approach to problem solving.	Unit 1	✘	
	Unit 2	×	Checking that the system meets user requirements, with reference to the specification and by testing it. Producing appropriate and useful user documentation. Also describing the different tasks in designing the system and how they were approached, as well as any problems and how they were tackled: what worked well and what didn't. Also making suggestions for avoiding those problems.
	Unit 3	✘	

Appendix D – Key skills mapping – Level 2

Key:

✔	The unit contains clear opportunities for generating key skills portfolio evidence.
✻	The unit contains opportunities for developing the key skill, and possibly for generating portfolio evidence if teaching and learning is focused on that aim.
✘	There are no obvious opportunities for the development or assessment of the key skill in the unit.

Key skill	**GCSE unit**	**Examples of opportunities for developing the key skill or for generating key skills portfolio evidence** **NB** These are illustrative only.	
N2.1 Interpret information from **two** different sources, including material containing a graph.	Unit 1	✘	
	Unit 2	✻	Designing ICT systems which match user needs will require familiarity with applications such as spreadsheets and databases and the graphical representation of numerical data. This may provide opportunities for students to interpret and manipulate such data.
	Unit 3	✘	
N2.2 a Carry out calculations to do with amounts and sizes.	Unit 1	✘	
	Unit 2	✘	
	Unit 3	✘	
N2.2 b Carry out calculations to do with scales and proportions.	Unit 1	✘	
	Unit 2	✘	
	Unit 3	✘	
N2.2 c Carry out calculations to do with handling statistics.	Unit 1	✘	
	Unit 2	✘	
	Unit 3	✘	
N2.2 d Carry out calculations to do with using formulae.	Unit 1	✘	
	Unit 2	✘	
	Unit 3	✘	

Key skill	GCSE unit	Examples of opportunities for developing the key skill or for generating key skills portfolio evidence **NB** These are illustrative only.	
N2.3 Interpret the results of your calculations and present your findings. You must use at least **one** graph, **one** chart and **one** diagram.	Unit 1	✻	Organising numerical information using spreadsheet software may involve some manipulation of data, and presentation in a variety of forms will be possible.
	Unit 2	✘	
	Unit 3	✘	
C2.1 a Contribute to a discussion about a straightforward subject.	Unit 1	✘	
	Unit 2	✻	Investigating how departments in an organisation use ICT, finding out about network protocols and services, and identifying user requirements before and after designing an ICT system. Discussions might be with IT or other personnel or as part of a group investigation of an organisation.
	Unit 3	✻	Group discussions on what the development of new ICT has meant for individuals, communities, businesses etc.
C2.1 b Give a short talk about a straightforward subject, using an image.	Unit 1	✘	
	Unit 2	✻	Brief presentations, to the class or others on the design and implementation of an ICT system, possibly as part of its evaluation, and to check it meets user requirements.
	Unit 3	✻	Brief presentations on different types of technology for exchanging information, on how ICT is used in business, on the misuse of ICT, on how new ICT has affected personal communication, how it is used by communities and people with particular needs etc.
C2.2 Read and summarise information from **two** extended documents about a straightforward subject. One of the documents should include at least **one** image.	Unit 1	✘	
	Unit 2	✻	Network protocols, company reports showing the functions of different departments, case study material, textbooks, etc. There must be evidence that information from such sources has been summarised in the student's work.
	Unit 3	✻	Literature from technology companies eg mobile phone companies, on-line banks, ISPs etc, newspaper supplements/articles, text books, etc. There must be evidence that information from such sources has been summarised in the student's work.

Key skill	GCSE unit	Examples of opportunities for developing the key skill or for generating key skills portfolio evidence **NB** These are illustrative only.	
C2.3 Write **two** different types of documents about straightforward subjects. One piece of writing should be an extended document and include at least **one** image.	Unit 1	✘	
	Unit 2	×	Reporting on the information requirements of a system, which could be supported by data-flow diagrams, producing a design specification for an ICT system, describing components, reporting how an organisation uses ICT etc.
	Unit 3	✻	Reporting on investigations of the variety of technology used to exchange information and carry out transactions, and about related hardware and software. These would readily be supported by diagrams. Reporting on how ICT has changed working styles, personal communications etc.
WO2.1 Plan straightforward work with others, identifying objectives and clarifying responsibilities, and confirm working arrangements.	Unit 1	✘	
	Unit 2	✻	Investigating information flow and the use of ICT in an organisation, or design an ICT system as a group activity in which objectives and responsibilities for researching different aspects are allocated to individuals. Could fulfil the group-working requirement for this key skill.
	Unit 3	✻	Investigating available technologies and the effects of ICT on personal communications, working practices, communities etc as group activities, in which responsibility for researching different aspects could be allocated to individuals. Could fulfil the group-working requirement for this key skill.
WO2.2 Work co-operatively with others towards achieving identified objectives, organising tasks to meet your responsibilities.	Unit 1	✘	
	Unit 2	×	Designing an ICT system requires the identification of user requirements and the development of a system that matches them. Working with the user would give an opportunity for one-to-one working. This could also feed into group working on the overall design.
	Unit 3	✻	Allocating different tasks to individuals eg to find out about how work practices in an organisation have changed since the introduction of ICT, which they must then progress themselves to meet the group's objectives. Seeking advice as necessary. Could fulfil the key skill requirement for one-to-one working if work in pairs, from someone who has worked for a long time in an organisation which uses ICT, a tutor etc.
WO2.3 Exchange information on progress and agree ways of improving work with others to help achieve objectives.	Unit 1	✘	
	Unit 2	✻	Planning the group's work to allow for progress checking, feedback and brainstorming eg on ways to meet requirements, making alterations, ideas for user documentation etc.
	Unit 3	✘	

Key skill	GCSE unit	Examples of opportunities for developing the key skill or for generating key skills portfolio evidence **NB** These are illustrative only.	
LP2.1 Help set short-term targets with an appropriate person and plan how these will be met.	Unit 1	✘	
	Unit 2	✻	Planning work on designing and implementing an ICT system in such a way as to allow opportunities for target-setting and planning, on a one-to-one basis with the student.
	Unit 3	✘	
LP2.2 Take responsibility for some decisions about your learning, using your plan and support from others to help meet targets. Improve your performance by: ÷ studying a straightforward subject ÷ learning through a straightforward practical activity.	Unit 1	✘	
	Unit 2	✻	If the student takes responsibility for successfully executing the plan for designing the system agreed in LP2.1, and chooses different approaches to finding out what they need to know, including a practical activity such as testing the system as it is being developed, consulting manuals or experts etc.
	Unit 3	✘	
LP2.3 Review progress with an appropriate person and provide evidence of your achievements, including how you have used learning from one task to meet the demands of a new task.	Unit 1	✘	
	Unit 2	✻	Reviewing what has been learned and how they went about it, on a one-to-one basis with the student eg in tutorials.
	Unit 3	✘	
PS2.1 Identify a problem and come up with **two** options for solving it.	Unit 1	✘	
	Unit 2	×	Designing an ICT system, identifying the nature of the task, and then any problems as they arise. Identifying why they are problems eg that the system will not meet a certain requirement of the user, coming up with solutions such as trying alternatives, consulting a manual or a tutor and choosing a way forward. Similarly, dealing with any problems arising during implementation.
	Unit 3	✘	

Key skill	GCSE unit	Examples of opportunities for developing the key skill or for generating key skills portfolio evidence **NB** These are illustrative only.	
PS2.2 Plan and try out at least **one** option for solving the problem, obtaining support and making changes to your plan when needed.	Unit 1	✘	
	Unit 2	×	Producing a design specification that meets user requirements, specifies tasks and resources, and tackles any problems arising during the design process. Implementing the specification and making any adjustments that become necessary.
	Unit 3	✘	
PS2.3 Check if the problem has been solved by applying given methods, describe results and explain your approach to problem solving.	Unit 1	✘	
	Unit 2	×	Checking that the system meets user requirements, with reference to the specification, and by testing it, explaining any modifications etc. Producing user documentation which reflects modifications and how the finished system functions. Also, conclusions about the nature of any problems, what worked well and what didn't etc.
	Unit 3	✘	

Appendix E – Wider curriculum – spiritual, moral, ethical, social and cultural (SMESC) signposting

The purpose of the following tables is to signpost possible opportunities for assessing SMESC related issues, as well as signposting opportunities for the inclusion of Citizenship (Cz), Environmental (En) and European initiatives (EI) assessment possibilities. These opportunities derive from the unit specifications for the specific subjects areas, as such they may be included more than once (if such an opportunity arises in the units more than once). Subsequently, the opportunity to assess a given criterion can occur more than once. The rationale behind this is that a student may require more than one opportunity to achieve the criterion, or the teacher may be elect to pursue a latter opportunity should it fit more easily into the assessment design.

It should be noted that the signposting serves only to highlight possible assessment opportunities. It is suggestive and therein a marker of an indicative assessment opportunity. It is not a prescriptive order, more a marker of prospective assessment occasions for a given criterion. It signifies potentiality for given SMESC, Cz, EI and En criteria to be assessed; it is not mandatory for assessment at every opportunity signposted. The discretion of the teacher in how and when to include the signposted opportunity in an assessment vehicle will be essential. As such, the signposting tables are an initial attempt to indicate where such opportunities may be found. It is envisaged that subject specialists and teachers will transform the signposting into 'real' opportunities for assessment. Further, that they will furnish in detail the potential assessment opportunities with context-driven scenarios that are conscious of the students' own backgrounds and circumstances in an attempt to realise the assessment opportunity.

Wider curriculum signposting

Key:

Sp	spiritual	**M**	moral
E	ethical	**So**	social
C	cultural	**Cz**	citizenship
EI	European initiatives	**En**	environment

	Sp	M	E	So	C	Cz	EI	En
Unit 1 How different organisations access ICT introduces So (in terms of access/equity/use) and how it has impacted on Cz more broadly (tenuous).				*				
User requirements, and communication needs of those groups, and the need to provide for all groups of people – So, C and Sp (ie dates such as 09/10/01 would give different dates in the UK to the USA).	*			*	*			
The use of ICT has an En dimension (ie the paperless office).								*
EI and legal consideration must be given to web browsing, manipulating data and access/use of data; this also has an E dimension and possibly M (ie accessing unregulated web-pages). Data must also be recognised/cited – E and M.		*	*				*	
Unit 2 The use of ICT by organisations introduces So and C issues.				*	*			
Why and how organisations use ICT introduces E, So and Cz dimensions.			*	*		*		
Data protection issues in the use of ICT require EI and legislative consideration, as do the regulations governing practice. E will come in the form of 'correct' usage of that data.			*				*	
Network protocols and network services (including firewalls) introduce an E and M aspect to use of systems.		*	*					
The pace of change and development of technology introduces So issues (access and equity) but also En in terms of obsolescence.				*				*
User requirements necessitate recognition of So, C and Sp and potentially Cz variables.	*			*	*	*		
E and So considerations will come in the form of manual versus technological systems.			*	*				

	Sp	M	E	So	C	Cz	EI	En
Unit 3 The use of ICT by all sectors of society and how they affect everyday life introduces Sp, So C and Cz issues.	*			*	*	*		
Negative and positive implications of ICT introduce E and M dilemmas (possible job losses) and therein So, En impact (of a paperless office).		*	*	*				*
Technological developments must also recognise associated legislative frameworks – EI.							*	
How ICT has effected work styles and personal communications and how ICT is used in community activities brings to bear Cz, So and C factors.				*	*	*		
EI/legal consideration, and E and M aspects (ie accessing unregulated web-pages) must be acknowledged when accessing and manipulating data.		*	*				*	

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