



Curriculum Description for London Examinations GCE 'A' Level

London Examinations Advanced Subsidiary (8751/8752)/Advanced GCE (9751/9752) in APPLIED ICT

The Edexcel GCE in Applied ICT has been developed to provide a broad educational basis for further training, further education or for moving into appropriate employment within the ICT sector. They have been designed to be delivered in a work-related context and to allow learners to develop an understanding of the ICT sector.

All Edexcel GCE qualifications in Applied ICT are designed to give learners broad skills, knowledge and understanding of the ICT sector. In particular, they will encourage learners to develop:

- A broad range of ICT skills and knowledge of the uses of ICT in vocational contexts, as a basis for Progression into further learning in ICT-related fields, including progression from AS to A2
- Knowledge and understanding of the components, functions and applications of information systems within a range of organizations
- An understanding of the main principles of solving problems using ICT and development of the skills necessary to apply this understanding.

In addition, Advanced GCE specifications encourage learners to:

- apply their knowledge and understanding of ICT and use skills (e.g. planning, research, evaluation, problem solving) in vocational contexts
- develop an understanding of the impact of information systems on organizations'' personnel, policies and practices
- develop project management skills and an understanding of the need to work with others.

In addition, Advanced GCE (Double Award) specifications encourage learners to develop their understanding of:

- Software system design to meet the needs of an end user
- Networks and communications.

End-users and practitioners

The AS GCE (3-unit) and Advanced GCE (6-unit) qualifications provide an opportunity for learners to develop further as ICT end-users. End-users are those who use ICT, typically desktop applications, on a daily basis in a work role to enhance personal productivity, facilitate communication, enable collaborative working etc.

In addition, the AS GCE (Double Award) and Advanced (Double Award) qualifications provide a foundation for development towards practitioner competence. ICT practitioners are those working in an ICT role either in an IT organization or in the IT department of a non-IT organization.

Each unit also has either an end-user or a practitioner focus. This is reflected in the type of evidence that learners are required to produce. Practitioner-focused units require learners to demonstrate their ability to work with clients and end-users and produce products or services for someone else to use. In contrast, user-focused units assume that learners are using ICT for their own purposes and are not necessarily using ICT to produce something for someone else to use.

Unit 1: The Information Age 1

Unit 2: The Digital Economy 1

Unit 3: The Knowledge Worker 1

Unit 4: System Design and Installation 2 (NA)

Unit 5: Web Development 2 (NA)

Unit 6: Technical Support 2 (NA)

Unit 7: Using Database Software 1

Unit 8: Managing ICT Projects 1

Unit 9: Communications and Networks 2 (NA)

Unit 10: Using Multimedia Software 1

Unit 11: Using Spreadsheet Software 1

Unit 12: Customizing Applications 1

Unit 13: Web Management 2 (NA)

Unit 14: Programming 2 (NA)

Unit 1: The Information Age
AS compulsory unit
Internally assessed

In this unit you will learn about the information communication technologies that enable people to access and exchange information and to carry out transactions anytime, anywhere.

You will take a critical look at the impact that the internet has had on the way people conduct their personal and professional lives, explore the services it offers and gain 'hands-on' experience of using some of them. You will investigate the causes and effects of the digital divide which separates the 'haves' from the 'have nots' and evaluate measures being taken to bridge the gap.

Your investigation and evaluation of all these aspects of the age in which you live will be presented in the form of an e-book designed to be read on a computer screen.

This is a user-focused unit. The knowledge and skills developed in this unit are particularly relevant to those who use ICT on a daily basis at work or at school/college for personal, social and work-related purposes.

Unit 2: The Digital Economy
AS compulsory unit
Internally assessed

In this unit, you will investigate how organizations' are responding to the pressures of the e-marketplace by using transactional websites to:

- present their products and services
- gather information
- provide a personalized service.

As an informed ICT user, you need to be aware of the methods used by organizations to persuade their customers to reveal personal information about themselves and what it is used for.

Security and privacy are two key concerns for organizations and individuals operating in the digital economy. You will assess potential threats to customer data and evaluate the effectiveness of current legislation and measures taken by organizations to protect data. Databases are key to managing the large amount of data that organizations collect. You will learn how to use database software to analyze data and identify trends and patterns. Your work for this unit will culminate in an in-depth investigation into the design of a commercial transactional website and the back-office processes involved in handling an online purchase.

You will apply your database skills to the task of storing and analyzing given data in order to identify significant trends and then make recommendations based on your interpretation of them.

This is a user-focused unit. The knowledge and skills developed in this unit are particularly relevant to those who use ICT on a daily basis at work or at school/college for personal, social and work-related purposes.

Unit 3: The Knowledge Worker
AS compulsory unit
Externally assessed

We all encounter situations where we have to weigh up alternatives and make decisions. For example, if you organize a school disco, you need to work out how much you should charge for tickets – enough to cover the cost of the event, but not so much that it puts people off coming. When choosing a university or college, you need to take factors such as fees, traveling costs and accommodation into account as well as the courses that are available and the entrance requirements. You may have a personal preference for a particular course, but other factors may lead you choose another. In this Information Age computers and communications technology provide many of us with access to vast quantities of information. As ICT users, we need to make judgements about sources and accuracy of information and be able to select and manipulate information to support sound decision making.

People who work at the tasks of developing or using knowledge are known as knowledge workers — in the world of ICT this includes programmers, systems analysts, technical writers and — most importantly — users. In other words, you are a knowledge worker! Knowledge workers are discerning consumers of information. They have the information-handling skills to turn information into knowledge. In this unit you will learn about making informed decisions using the knowledge available to you. As you already know, not all information is current or accurate. You will learn how to select your sources and decide on how much credence you can place in them. You will learn that there are often many factors to consider when making a decision and that part of the process is to identify gaps in your knowledge. Decisions often have to be made within time constraints. You will learn how to manage your time effectively by prioritizing tasks and setting interim deadlines.

In Unit 2 you will have used database software to organize and interrogate a large data set and to extract useful information. In this unit, you will develop your skills as a knowledge worker by learning how to use spreadsheet models to investigate alternatives and answer ‘what-if’ questions. The formulae in these models will allow you to try out some of the possible alternatives that you have identified. Together with information from other sources, you will use the outcome of the models to inform your decision making.

Assessment — Unit 3: The Knowledge Worker

This unit is externally assessed through a two-hour examination and must be taken in one sitting during a designated five-day window. Working under supervision, you will be required to make and justify a decision based on what you know about a given scenario and what you are able to deduce from the information provided. To help you reach your decision you will be given a number of e-resources, including a spreadsheet model that partially represents the given situation.

You will use the information provided to add to your knowledge of the scenario and inform your decision making. Details of the scenario will be issued in advance of the examination to give you an opportunity to familiarize yourself with it and to carry out some preliminary research. However, details of the decision to be made will only be provided at the start of the examination.

You will be expected to use standard office software to help you make, present and justify your decision. At the end of the designated examination period, you will transfer your work to a location specified by your teacher. Your work must be submitted in the format specified on the front of the examination paper.

Unit 7: Using Database Software
A2 compulsory unit
Externally assessed

In Unit 2, you used database software to organize and interrogate structured information and produce reports. You saw how large organizations rely on databases to manage their information and provide them with fast and flexible access to it. You looked at examples of transactional websites which use databases to store product, customer and sales information and learned at first hand how database queries can be used to analyze information and identify trends.

In this unit you will develop your knowledge of, and skills in using, databases further. You will learn the principles of data modeling and sound database design, and will use relational database software to build working database systems capable of storing large quantities of data and of handling both routine and one-off requests for information. In all likelihood, people other than yourself will want to use some — if not all — of the databases you create. With this in mind, you will design and implement user interfaces that make it easier for people to enter data and extract information, whilst ensuring the overall security and integrity of the database. You will make full use of the facilities of the software to produce reports that are well presented, easy-to-read and fit for purpose. Your work for this unit will culminate in the design, development and testing of a database for a specific purpose. This is an externally assessed unit.

This is a user-focused unit. The knowledge and skills developed in this unit are particularly relevant to those who use advanced ICT skills on a daily basis at work or at school/college for personal, social and work-related purposes.

Assessment — Unit 7: Using Database Software

This unit is externally assessed. Working under supervision, you will be required to design, implement and test a relational database system to meet a given set of functional requirements. Some of the data to be stored in the database will be supplied to you as a comma separated values (CSV) file.

You will have 10 hours in which to complete this work.

During the production of your database system, you should actively seek and respond to feedback from others. However, the final database solution must be entirely your own work.

Only fully functional relational database software capable of supporting one-to-many relationships should be used for this unit. At the end of the designated examination period, you will transfer your work to a location specified by your teacher. Your work must be submitted in one of the formats specified on the front of the examination paper.

Unit 8: Managing ICT Projects
A2 compulsory unit
Internally assessed

You already have considerable experience of planning and carrying out small-scale projects. You know how difficult it can be to juggle resources and make effective use of time. Imagine how much more difficult it is when the project you are managing involves large numbers of people, lots of resources and substantial amounts of money! Determining what has to be done when and by whom, keeping track of progress and reporting to senior management requires considerable expertise. Perhaps not surprisingly, a large number of projects — particularly in ICT — do not fully meet their objectives. Some fail spectacularly!

It is now widely recognized that specialist knowledge and skills are required to manage projects successfully. This unit will introduce you to some formal project management tools and methods and give you an opportunity to use specialist software to plan and monitor projects. You will be able to put into practice what you have learnt by setting up and running a small-scale software project. You will have to draw upon the knowledge and skills you have learned throughout the course in order to plan for and produce the required software product. It is assumed that you already have skills in at least two different software applications and some experience of the processes involved in software design and implementation.

Although – in real life – budgeting is an important factor in any project, you will not be expected to consider finance. However, you will need to identify other resource requirements such as expertise, equipment and time. This is not a team activity, but will involve working closely with others, since people skills and good communication are key to successful project management.

The summative evaluation of your work for this unit will take the form of an end-of-project review at which you and other project stakeholders will assess the success of the project and your performance as the project manager.

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Unit 10: Using Multimedia Software
A2 optional unit
Internally assessed

Everything is created to be communicated! Advances in digital technology have transformed the way we live and learn and, in particular, how we communicate. One of the major areas of development is digital multimedia which combines two or more media types such as text, graphics and video, and allows us to present information in ways that have a major impact on the audience. Multimedia is widely used throughout the world in business, education, industry and leisure.

You will already have gained experience of some of the ICT tools and techniques needed to develop a multimedia product. In this unit you will increase your understanding of the features and possibilities of these and other tools so that you can combine them to produce well-designed multimedia products that communicate your ideas effectively.

Your work for this unit will culminate in the design, development and testing of an interactive multimedia product for a specified target audience.

You will establish the functional requirements of the product at the outset and carry out formative evaluation and testing throughout its development. You will learn the importance of seeking and making use of feedback from others to help you in your work.

The summative evaluation of your work for this unit will include a self-assessment of your current skill level and an indication of what else you need to know or be able to do in order to further enhance your ability to produce interactive multimedia products

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Unit 11: Using Spreadsheet Software
A2 optional unit
Internally assessed

In Unit 3 you used spreadsheet models to investigate alternatives and make decisions. You saw what a versatile and powerful decision making tool a spreadsheet can be. In this unit you will learn the skills and techniques needed to design and create technically complex spreadsheets yourself.

A decision based on flawed logic could have disastrous consequences! You will learn the importance of checking that any spreadsheets you create or use can be relied on to produce accurate information in all circumstances. The 'garbage in, garbage out' maxim applies just as much to a spreadsheet as it does to any other data processing system. You will learn how to use data validation and other techniques to reduce the potential for data entry errors.

In order to get maximum return from any spreadsheets you create, you will learn how to incorporate 'future proofing' features which make it easier for you to implement modifications and extensions at a later date should you need to do so.

You will establish the functional requirements of the software at the outset and carry out formative evaluation and testing throughout its development. You will learn the importance of seeking and making use of feedback from others to help you in your work. Your work for this unit will culminate in the design, development and testing of a spreadsheet capable of analyzing, interpreting and communicating complex data. You will not be expected to draw up your own set of user requirements. Instead you will be given a scenario and brief to work from which will enable you to demonstrate your competence.

The summative evaluation of your work for this unit will include a self-assessment of your current skill level and an indication of what else you need to know or be able to do in order to further enhance your ability to produce and use complex spreadsheets.

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Unit 12: Customizing Applications
A2 optional unit
Internally assessed

You already have considerable experience of using generic applications such as word processing, presentation, database and spreadsheet software.

As you know, applications such as these provide a wealth of functionality — more than enough to meet most users' requirements. Nevertheless, there are occasions when the software just will not do exactly what you want. In this unit you will learn how to use an event-driven programming language such as Visual Basic for Applications (VBA) to enhance the existing functionality of applications software, enabling you to create applications with more scope and flexibility than is possible using readymade macros, forms etc.

Your work for this unit will culminate in the design, development and testing of a custom solution to a problem requiring the use of either database or spreadsheet software, with added functionality provided by an event-driven programming language.

The summative evaluation of your work for this unit will include a self-assessment of your current skill level and an indication of what else you need to know or be able to do in order to further enhance your competence.

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Eportfolio

Learners must submit their work for each internally assessed unit in an eportfolio. This will allow

assessors and moderators to view their evidence on-screen. This has obvious advantages for some types of evidence, namely products that were designed to be viewed/used on-screen, such as the e-book produced in Unit 1 and the website produced in Unit 5. However, it also gives learners an opportunity to present information in multimedia form, using, for example, audio and/or video to comment on their work and capture ephemeral evidence such as working with others. Being able to present evidence effectively in an eportfolio is an important skill.

Learners will need to understand the difference between document creation and document publication and to distinguish between file formats appropriate for document creation and read-only file formats appropriate for viewing. They will be expected to present eportfolio content in a format appropriate for viewing at a resolution of 1024 x 768 pixels.

The eportfolio must be constructed so that its contents can be accessed using 5th generation, or equivalent, web browsers, such as Microsoft Internet Explorer version 5 or Netscape Navigator version 5.

Learners may need access to suitable conversion software and compression software. Learners will need to be taught techniques for optimizing available storage space and will be expected to limit the size of their eportfolios.

Differentiation across AS and A2 units

Differentiation across AS and A2 units are characterized in general terms by:

- increasing depth and breadth of understanding
- increasing application of knowledge and understanding and skills
- increasing independence.

Differentiation also occurs through the content of the units. AS unit content forms the foundation knowledge and understanding which underpins the higher level concepts found in the A2 units

Resources

Equipment

Learners should have access to:

- Desktop/laptop computers ideally with the following minimum specification (based on the Beta workstation specification 2/10/03)
 - 256MB memory
 - 1.7 GHz Intel processor or equivalent
 - 40GB hard drive
 - Video card with 32MB memory
 - CD/DVD
 - Some form of rewritable media
 - UK keyboard and pointing device
 - colour, high resolution monitor, capable of supporting 1024x768
 - sound output (16 bit soundcard, output through speakers/headphones)
 - sound input (microphone)
 - printing facilities
 - digital camera, scanner, tape recorder
 - sufficient individual storage space
 - internet access (broadband)
 - Windows XP operating system or equivalent
 - software
 - word processing eg Microsoft Word, OpenOffice Writer
 - presentation eg Microsoft PowerPoint, OpenOffice Impress
 - web authoring eg FrontPage 2003, Quanta+, Mozilla Composer, Publisher 2003
 - graphics eg CorelDraw, Adobe Photoshop Elements.
- UA015271 – Specification – Edexcel AS/A GCE in Applied ICT (Single and Double Awards) 30 ards) – Issue 1 – February 2005

Other reading Learners should be encouraged to keep up to date by reading some of the

many computer/web magazines available, such as *Web User* published by IPC Media and *Internet & Broadband Advisor*, published by Future Publishing. In addition to topical information, most of these magazines provide handy hints and tips, ideas for projects, free software and inspection copies etc.