Scheme of Work IGCSE IT 2007

Introduction

Welcome to this tutor resource for the IGCSE in Information Technology (IT). We hope you will find it useful as you plan your courses and prepare students for assessment.

The course is split into theory and practical sections, with units 1 to 8 of the scheme of work covering the theory work and units 9 to 16 covering the practical elements. The requirement of the practical units demands high standards of accuracy from its candidates, who may be working on very different software packages. This factor has been borne in mind when producing these materials. The practical units can be used by teachers with little experience of IT teaching as well as by more experienced members of staff. Of course, they will need to be adapted and used according to your particular teaching situation and the ability and previous experience of your students. However, whether used merely to spark off teaching ideas or in a more structured way lesson to lesson, there should be something here for anyone delivering an IT-based course.

Planning your course

As a guideline, the course is designed to take around 170 learning hours, which is usually covered in two years of study. This assumes that students starting the course have at best a little knowledge and experience of IT, but are now seeking to develop a firm foundation of basic competencies in IT, and to gain a broad theoretical knowledge as well as a range of practical work-related IT skills. This amount of time could vary considerably, depending on students' prior experience.

There are various structures for delivering these courses, some centres prefer to deliver the theory and practical elements separately, others prefer to deliver sections of these elements together. There is a requirement for regular hands-on practice in order to develop the practical skills required for the practical elements of the course and course planning should reflect the availability of resources within your centre. For the theory section of the course, students generally tend to be looking to be taught a defined set of knowledge, so there needs to be a significant amount of whole-class teaching where access to hardware and software for all students is not required..

It is usually beneficial to vary the approach and the methods used. Although for the practical elements of the course the majority of time will be spent on the computer in the practice of the specified skill areas, it is also necessary to include other teaching techniques to encourage learning. This may include more informal delivery, workshops, brainstorming sessions, and student data gathering.

What this resource contains

- an outline of what is assessed in each unit
- a reference to recommended prior knowledge, teaching order and an outline of hardware and software requirements
- a list of learning outcomes, suggested teaching activities and online as well as other resources, covering all the Assessment Objectives of the syllabus
- a list of exercises and support files for the practical units

Syllabus 0418 IGCSE INFORMATION TECHNOLOGY

Recommended Prior Knowledge
Basic computer literacy, with knowledge of file handling and some familiarity with application packages for text editing, word processing, database and spreadsheet is assumed for students starting these units.

General Resources

(a) Software
A computer system structured in such a way that enables students to load and save their work with their own storage facilities.
E-mail software which enables reading and sending e-mail messages with or without file attachments. Each candidate will be required to have an individual e-mail account. Each candidate will require access to the internet and access to web browsing software. Web editing software, which could be a sophisticated web authoring package or a simple text editor. Each candidate will also be required to use a word processing (or desktop publishing) package (capable of integrating text, images, database extracts, graphs and charts), a database package (which has field types and sub-types), a spreadsheet package, charting package (this may be integrated within the spreadsheet selected), and a presentation authoring package.

Centres may find it more cost effective to select an integrated suite of packages for many of the applications listed above.

(b) On-line resources
http://www.bbc.co.uk/schools/gcsebitesize/ict/ (for revision mainly)
http://www.howstuffworks.com/ (a lot of the information given is perhaps too detailed for GCSE level but it is a useful site for teachers to use)
http://www.jegsworks.com/Lessons/index.html
http://foldoc.doc.ic.ac.uk/foldoc/index.html and http://www.webopedia.com/ (dictionaries of computing terms. Use them to find out about any ICT words or names)
http://www.thekjs.essex.sch.uk/yates/gcse_it_revision.htm (for revision mainly)
http://www.cedar.u-net.com/
http://www.hothouse-design.co.uk (This site may be used for the practical papers 2 and 3)
http://www.dygitell.com (This site may be used for the practical papers 2 and 3)

A variety of search engines will be required and could include:
http://www.google.com
http://www.yahoo.com
http://www.ask.co.uk
http://www.dogpile.com
http://www.altavista.com

(c) Text books

General textbooks for reference:
Leadbetter, C. & Wainwright, S. (2004). *Computer Studies and Information Technology: IGCSE and O Level*. Cambridge University Press: Cambridge
Walmsley, D. et. al. (2004). *Information and Communications Technology for OCR GCSE*. (2nd Edition). Hodder Soughton: London
Sargent, B. & Walmsley, D. (2003). *Information and Communications Technology for GCSE: Foundation Edition*. Hodder Soughton: London

Parts
The course splits into two parts, one for the theoretical elements of the course, which are assessed by a written examination (paper 1); and the second part for the practical elements of the course, which are assessed by two practical examinations (papers 2 and 3). Paper 1 has 40% of the final marks allocated to it, and papers 2 and 3 each have 30% of the final marks allocated to them.

Part	Section/Unit	Section/Unit title	Outline of Section/Unit	Syllabus references
1 Theory	1	Components of a Computer System	• Defining, describing and identifying the differences between the hardware and software components of a computer system. Candidates will need to be able to give examples of hardware and software. They will need to identify the features of different operating systems.	1a, 1b, 1c, 1d & 1e
	2	Input and Output Devices	• Identifying input and output devices together with suitable uses.	2a, 2b, 2c & 2d
	3	Storage Devices and Media	• Describing common backing storage media and associated devices. Identifying typical uses of these, types of access and access speeds. • Giving advantages and disadvantages of each. • Defining backups. • Describing the difference between main memory and backing storage.	3a, 3b, 3c, 3d & 3e
	4	Computer networks	• Describing types of networks, their characteristics and their uses. • Identifying the differences between LANs and WANs. • The problems and issues associated with networked data.	4a, 4b, 4c, 4d, 4e, 4f, 4g, 4h, 4i, 4k & 4l
	5	Data Types	• Identifying and selecting different data types: logical/Boolean, alphanumeric/text, numeric (real and integer) and date. • Describing what is meant by the terms file, record, field, and key field.	5a, 5b & 5c

Part	Section/Unit	Section/Unit title	Outline of Section/Unit	Syllabus references
	6	The Effects of using IT	• Describing what is meant by software copyright, a computer virus. • Explaining the measures that must be taken in order to protect against hacking and viruses. • Describing the effects of information technology on patterns of employment, also microprocessor-controlled devices in the home and the issues. Describing the capabilities and limitations of IT including issues relating to information found on the Internet. • Describing the potential health problems related to the prolonged use of ICT equipment and some simple strategies for preventing these problems. Describing a range of safety issues related to using computers and measures for preventing accidents.	6a, 6b, 6c, 6d ,6e, 6f, 6g & 6h

	7	The ways in which IT is used	Having an understanding of a range of IT applications in everyday life and being aware of the impact of IT in terms of communicating applications, data handling applications, measurement applications, control applications and modeling applications.
			
			• Understanding the differences between batch processing, on-line processing and real-time processing.
			• Understanding of a wider range of work-related IT applications and their effects, including:
			  • communication applications,
			  • applications for publicity and corporate image publications;
			  • applications in manufacturing industries;
			  • applications for finance departments;
			  • school management systems;
			  • booking systems;
			  • applications in banking;
			  • applications in medicine;
			  • applications in libraries;
			  • the use of expert systems;
			  • applications in the retail industry.
				7.1a, 7.1b, 7.1c, 7.1d & 7.1e
				
				7.2a, 7.2b, 7.2c, 7.2d, 7.2e, 7.2f, 7.2g, 7.2g, 7.2h, 7.2i, 7.2j & 7.2k

Part	Section/Unit	Section/Unit title	Outline of Section/Unit	Syllabus references
	8	Systems Analysis and Design	Analysis: • Describing different methods of researching a situation. • Stating the need for establishing the inputs, outputs and processing in both the existing system and the proposed system, the need for recording information about the current system, the need for identifying problems with the current system, the need for identifying suitable hardware and software for developing a new system, the need for identifying the user and information requirements necessary to resolve the identified problems and the need for specifying the required hardware and software. Design: • Stating the need for producing designs for documents, files, forms/inputs, reports/outputs and validation. • To solve a given problem, being able to design data capture forms, screen layouts, report layouts, screen displays, validation routines and the required data/file structures. Implementation: • Identifying the different methods of system implementation and suitable situations for the use of these methods. • Stating testing strategies that would be employed in implementing the new system. • Identifying improvements that could be needed as a result of testing. Verification: • Identifying the need for, and the different methods of, verification when entering data. Documentation: • Identifying the components of technical and user documentation for an information system. Evaluation: • Stating the need for evaluating a new system in terms of the efficiency, ease of use, and appropriateness of the solution; comparing the solution with the original task requirements; identifying any limitations and necessary improvements to the system and evaluating the users' responses to the results of testing the system.	8.1a, 8.1b, 8.1c, 8.1d, 8.1e, 8.1f & 8.1g 8.2a, 8.2b, 8.2c, 8.2d & 8.2e 8.3a, 8.3b, 8.3c & 8.3d 8.4 8.5a & 8.5b, 8.6a, 8.6b, 8.6c & 8.6d

Part	Section/Unit	Section/Unit title	Outline of Section/Unit	Syllabus references
2 Practical	1	Communication	• Using the Internet and e-mail to gather and communicate information.	1.1, 1.2, 1.3, 1.4, 2.1, 2.2 & 2.3
	2	Document production	• Using word processing facilities and preparing to incorporate output from other applications into an integrated document. The candidate will need to open a stored file and have available an image for placing as well as a file to insert into the document.	3.1, 3.2, 3.3, 3.4, 4.1, 5.1, 5.2 & 5.3
	3	Data manipulation	• Using database facilities to set up data structures, interrogate, manipulate, sort and present data to solve problems. • Using a charting package to produce, manipulate and label graphs and charts.	6.1, 6.2, 7.1, 8.1, 8.2, 9.1 & 9.2
	4	Integration	• Integrating data, graphs, charts and images into a word processed document to produce a single document or report. • Make final amendments to documents and to integrate data, images, graphs and charts into the document.	10.1
	5	Output data	• Producing output in a variety of formats from a variety of different sources.	11.1
	6	Data analysis	• Using a spreadsheet to create and test a data model, extracting, sorting and summarising data.	12.1, 12.2, 13.1, 14.1 & 15.1
	7	Website authoring	• Using web page authoring tools to create simple web sites with internal and external links and corporate styles using stylesheets.	16.1, 17.1, 17.2, 18.1, 19.1, 19.2 & 20.1
	8	Presentation authoring	• Using presentation software to create and control an interactive presentation for specified methods of delivery and audiences.	21.1, 21.2, 21.3, 22.1, 22.2 & 23.1

TEACHING ORDER

The order of teaching these units could include a mix of theory and practical topics throughout the course, or with blocks of theory work and blocks of practical work. Resource availability is often a major factor in determining the sequencing and timetabling of the various units.

The practical units can be taught in any order. If Unit 1 (Communication) is taught first then the students could gain valuable practice in the skills from this unit if files were sent as attachments to and from the tutor in subsequent units. It may be beneficial to teach practical Units 2 (Document production) and 3 (Data manipulation) before embarking upon Unit 4 (Integration). This would enable the course material used for units 2 and 3 to be integrated as part of delivering unit 4. Units 6 (Data analysis) and 8 (Presentation authoring) are primarily stand alone units, but elements of these units could also be used within Unit 4 (integration). It is recommended that Unit 1 (Communication) is delivered prior to starting Unit 7 (Website Authoring).