O Level Computer Studies 7010
Scheme of Work Overview

General Resources

(a) **Online Resources:** The following are reliable sites. Specific sections of some of these have been quoted in the individual units below.

- **Site 1** http://www.theteacher99.btinternet.co.uk/theteacher/gcse/newgcse/alltopics.htm revision and teaching topics for GCSE
- **Site 2** http://people.howstuffworks.com/ descriptions and demonstrations
- **Site 3** http://en.wikipedia.org/wiki/Industrial_robot use of robots in industry
- **Site 4** http://www.aiinc.ca/demos/whale.html an expert system for identifying whales
- **Site 5** http://www.data-harvest.co.uk/control/flo_software.html a simple demonstration of control
- **Site 6** http://www.teach-ict.com/ revision and teaching topics
- **Site 7** http://www.ictgcse.com/index.asp teaching topics and downloads
- **Site 8** http://www.bbc.co.uk/schools/gcsebitesize/ict useful for introducing a topic and revision
- **Site 9** http://www.bbc.co.uk/scotland/education/bitesize/standard/computing/
- **Site 10** http://www.computingstudents.com/ can be useful for some topics e.g. compilers and assemblers
- **Site 11** http://www.cedar.u-net.com/ict4demo/loader/indexc.htm clear detailed pages, 40% available free
- **Site 12** http://www.klbschool.org.uk/ict/gcse/theory/5_1/index_5_1.htm
- **Site 13** http://www.school-resources.co.uk/
- **Site 14** http://www.kids-online.net/kidsframe.html the parts of a computer
- **Site 15** http://www.colchsfc.ac.uk/ict/ICTASCourse/ict1/ict1-05/default.htm article on the social impact of the use of computers
- **Site 16** http://www.informationcommissioner.gov.uk/cms/DocumentUploads/Data%20Protection%20Act%20Fact%20V2.pdf UK fact sheet on data protection
- **Site 17** http://www.1776soft.com/ffblowcs.htm article on the consequences of system failure
- **Site 18** http://www.vnunet.com/computing/news/2141471/nats-system-failure-delays another article on the consequences of system failure
- **Site 19** http://www.psionica.co.uk/gcseict/ revision and teaching topics
- **Site 20** http://www.ewart.org.uk/it/op_sys/os_types.htm introduction to types of operating system
- **Site 21** http://www.atarimagazines.com/compute/issue149/60_Interrupts_made_easy.php article that compares interrupts and polling
- **Site 22** http://www.actden.com/skills2k/net.htm brief introduction to networking
- **Site 23** http://www.cie.org.uk/CIE/WebSite/home.jsp the CIE web site for the syllabus discussion group and recommended texts

(b)   Definitions of Computing Terms on the Web:

Some useful sites are: www.foldoc.org On-line computing dictionary
                           http://whatis.techtarget.com/ IT and Computing definitions
                           www.jworkman.com Web Site Production
                           www.webopedia.com On-line Computing/IT dictionary

(c)   The list of websites provided for each topic is by no means exhaustive. Some of the sites in this scheme of work contain very useful information on other topics in the syllabus. It is, therefore, worthwhile navigating around some of the sites to extract as much information as possible. Further websites may be obtained using a variety of search engines available, some of which include:

http://www.yahoo.co.uk/
http://www.google.com/
http://www.bbc.co.uk/ (Search the Web)
http://www.altavista.com/

(c)   Other resources:

(General textbook other textbooks are on the website)

IGCSE and O Level Computer Studies and Information Technology, by Chris Leadbetter and Stewart Wainwright (Cambridge University Press, ISBN 0-521-5450-4), (Chapters are referenced in the scheme of work by prefix **L+W**)

This text has been developed to cover the CIE syllabuses for Computer Studies and Information Technology. It includes syllabus section references in the margins. Explanations are thorough; extension work is placed in boxes, to separate it from the main text for ease of location. The style of the chapters is suitable for students starting IGCSE course.

UNITS

Unit	Unit title	Outline of unit	Syllabus references
1	Range and scope of computer applications	The range and scope of computer applications including communication and information systems, on-line services, remote databases, commercial and general data processing, industrial, technical and scientific uses, monitoring and control systems, automation and robotics, expert systems and artificial intelligence, and miscellaneous other areas such as education and training, entertainment etc	*1.1*
2	The social and economic implications of the use of computers	Social and economic effects on people and organisations associated directly with the application, on other individuals and organisations, and on society in general. Economic reasons for the use of computers. Changes to and the development of new products and services. Changes in the working environment, employment and retraining. Privacy and integrity of data, data protection legislation, hacking and other computer crime, computer viruses. Security and reliability including consequences of system failure	1.2
3	Systems Analysis	Principles of systems analysis practically applied to coursework. Identification of the problem and stating it briefly. Deciding and stating specific outcomes, which are desired in the solution of a particular problem. Analysing the flow of information and data in existing (computer or manual) solutions. Evaluation of existing solutions and consideration of alternative solutions.	2
4	Algorithm design	Algorithm design and testing. Modular design.	*3.1*

5	Programming concepts	Practical programming in a high level language including – sequence, selection and repetition. High level and low level languages and their uses. Translation programs including compilers, interpreters and assemblers. Pseudocode structures. User and technical documentation	3.2
6	Generic software	Software for word-processing, database management, spreadsheets, graphics, communications, multimedia, data logging, CAD programming, desktop publishing and web design. How applications packages solve sets of standard problems. Typical problems capable of solution by packages. Use of standard techniques or routines for established forms of processing.	*4.1*
7	Organisation of data	The relationship between information and data; the collection of data; methods of ensuring its correctness (including validation and verification and the distinction between these); the coding of data for input; the presentation of useful information from processed data; analogue-to-digital and digital-to-analogue conversions. File organisation: different forms of organisation, depending on the data stored and the requirements for processing; processing methods. Data types: numbers, characters, strings, arrays, the need for different data types and structures to represent the data of problems which are being solved using a computer.	4.2
8	Hardware	Computer, microcomputer, microprocessor, standard input and output devices, broad classes of processor power. The functions and characteristics of storage media. The characteristics and performance of a range of peripherals (including control and communication devices).	*5.1*

4

9	Operating Systems	Operating system facilities including file management, peripheral control, use of buffers, interrupts, polling, handshaking and checksums.	5.2
		The nature of batch, online, multi-access, real-time transaction processing, multitasking, network and process-control operating systems.	
		The form of interface between the operating system and the user; use of command line and use of graphical user interfaces.	
10	Types of system	Batch processing, single and multi-user online systems, network systems, control systems, automated systems and multi-media	5.3
11	The Coursework project	A single piece of coursework of a substantial nature, involving the use of a computer to solve a specific problem, is to be carried out over an extended period. This will enable the students to use their skills and experience gained during the course to solve and document the solution to a problem	

TEACHING ORDER

Unit 1should be taught before Unit 2, Unit 3 before Units 4 and 5, Unit 9 before Unit 10 and Units 3, 4, 5 and 6 should be taught before project work is attempted or along side the appropriate sections of the coursework project. With these provisos the 10 units could be taught in any order, and taught sequentially or concurrently, depending on the resources available and the wishes of the teachers involved.