

## GCSE A Level Course comments

### Introduction

This document examines the syllabus for ICT and Computing offered by the three main UK examining boards, OCR, AQA and Edexcel. The aim is to compare content and to ask how the material relates to the needs of industry today.

ICT is a wide-ranging subject which does not just involve using spreadsheets and word processors: it is about the whole influence and application of ICT across industry, in the world, in entertainment, for example. .

Computing concerns more of a focus on the artefact, the programmes, the hardware. It is not very strong on addressing the application. The AQA syllabus sees computing as A level preparation for university computer science. The view of computer science focuses on a computational way of thinking, and on problem solving, a context in which the computer is only a tool. However, the syllabus is primarily concerned with studying the tools. The introduction to the AQA syllabus states that 'computer science is no more about computers than astronomy is about telescopes' But the syllabus is almost all telescopes. Which leads us to the question that if computers are the equivalent to telescopes, what is equivalent to astronomy?

These syllabuses show a differentiation between ICT and Computing in which as illustrated by the AQA suggesting that their syllabus have virtually no overlap. But they also illustrate wide variation between the boards. The syllabi show wide variation between boards. There are variations in coverage of application. Some are more 'academic', subscribing largely to a theoretical focus on the systems development lifecycle.

### EDEXCEL Applied ICT

Reasonable material on use of ICT.

Maps to e-skills and SFIA.

Good material on support etc.

Illustrates the massive range of knowledge and skills needed to work in ICT today.

...intellectual underpinning?

But too technically oriented. Too much about the development of web sites, spreadsheets, databases, systems.

Still large amounts on programming

Misses: Services, availability, commodity ICT, entertainment, procurement.

too much raw technology, lacking context, skills and guidance.

This ICT course identifies how it follows SFIA. However, it has too greater emphasis on programming.

## OCR ICT for 2009

New four unit kind.

Information, systems and applications. typical ICT coverage of user applications. ICT systems applications, implications. Uses a typical systems development lifecycle. Very artefact-based, technically oriented to the delivery of systems in a project context.

That's rarely how it's done nowadays.  
No ref to SFIA.

The artefact orientation misses a lot of the business and implementation issues. There is too much of a focus on the systems development life cycle.  
The material would not fit very well into the SFIA.

## OCR Applied ICT.

Starts off with ICT usage.  
Goes into software development – again a focus on the artefact, using DFDs!  
Follows classical systems analysis, focus on in the individual system, and referencing classical software engineering.  
Provides important input about web systems, networks, protocols.  
But very quickly we're off into programming. Hence this is still a course for programmers. Then Visual Basic programming and straight into classical project management.  
Very little application, a lot of production of artefacts and focus on the details of production. Website production as a programming exercise.  
Suggests the use of Visual Basic or C  
Individual needs is about gadgets / applications for disabled people.  
Again very classic, no ref to SFIA.

This is not really an applied ICT course. IF it is applied, the focus is in programming.

## OCR Computing New in 2008-01-10

New four unit type.

First unit : Computer fundamentals. Again we use the software development lifecycle. Numbers, validation. components classical hardware.  
Networks, something about the legal and social issues.

Unit 2 Programming, modular design, Pseudocode, recognition of RAD methods.  
Programming methods, subroutines, recursion Data types, assignment, self-documentation, testings.

Unit 3 is called advanced computing theory that is operating systems, interrupts, translators, computer architecture, RISC instruction set.

This course is really only designed for computer scientists, a very small constituency.

Data high level programming.

Only on to actually tackle oo programming and UML. includes BNF form and reverse Polish notation.

Databases, RDBMS includes learning SQL.

Unit 4 is a classical coding project, but does include evaluation of resulting computer system against requirements.

Provides a classical preparation for computer science. Advanced computing theory is really about the internals of the computer.

## AQA ICT

Four units. Practical problem solving

Looks at construction of an application for a wide variety of situations. Recognises the importance of selection and evaluation.

Living in the digital world. looks at nature and content of ICT system.

The use of ICT in the Digital World provides a strong basis for understanding ICT management in organisations. It identifies the need for strategy and policy, which other syllabus don't . It considers the types of information systems and the needs for information systems. It looks at the management of ICT solutions. It makes the student aware that there is more than just the systems lifecycle and a linear approach. It also gives significant attention to implementation of large scale systems, backup recovery, and identifies that there is a life after implementation. Maintenance, training and using external ICT services gives this unit an excellent business grounding and aligns with SFIA. Unit 4 concerns the development and delivery of a ICT application, with all the business steps involved.

Misses range of entertainment and other applications – is this engaging with student's experience of ICT? But identifies characteristics of users, also begins to tackle some service areas in backup and continuity of service.

This is the nearest to an ICT course which aligns with current use of ICT and industry roles.

## AQA Computing

Overlap with ICT avoided.

Focuses on computational thinking.

Say computer science is no more about computers than astronomy is about telescopes, but doesn't follow this in syllabus which is about computers,

Unit 2, for example, is exclusively about the structure of computer systems – programming language types, hardware elements, machine level architecture and hardware devices.

Unit 1 is about programming, data types etc, and writing a program, a skeleton program is provided as part of the exam. This is done in the context of a classical systems development life cycle.

Unit 3 is heavily technical, looking at algorithms, abstraction, intractable problems, BNF form and even reverse Polish notation! Programming concepts includes structured, procedural, OO, and recursive techniques. then there's stacks, pointers and lists. Standard algorithms are explored, and operating systems tackled. Database means relational databases. Also looks at Networks, routers, etc.

Unit 4 Practical projects. Using DFDs etc. A bit on HCI, but is peripheral. Standard testing. I.e. a standard computer science project....not easy. Could do something better than we do at Final year!

While being well structured, this is again really a preparation for computer science. It aligns with traditional computer science curricula in universities.

EDEXCEL Computing

EDEXCEL have simply stopped providing this A level. (although circus skills will run)

Starts off with uses of computer systems. and types of computer system.  
Classical systems development. top down design.  
Looks at all the various types of system software.  
Project management  
procedural programming.  
Designing and programming a computer system.  
A bit of HCI.

Really no more than a preparation for a classical computer science degree.

National Museum of Computing Bletchley Park.

Computing 16 Aug 2007 number taking A level computing was down from 6233 (2006) to 5610 (2007) and for A level ICT, down from 14208 to 13 360 40% drop in IT graduates by 2009