ICT AND COMPUTING

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- Monsur Ahmed (IT/Business teacher)

There isn't any area of our lives that isn't dependent on computers. There was probably a computer involved when you were born and most likely there will be when you die. And in between, computers will have an impact on every single aspect of your life. It's easy to think computers are in control of so much of our lives but of course they aren't. It's the people who control the computers who are in charge. Understanding and controlling the computers is what this GCSE is all about.

Whatever you want to become in the future studying Computing and ICT will provide you with invaluable knowledge and transferable skills.

KEY STAGE 3 (YEARS 7-9) – CAROUSEL

During year 7 and 8 pupils will study:

- Online Safety
- Algorithms
- Block based programming – Scratch
- Computer Hardware and Software
- Spreadsheet modelling
- Text based programming - Python
- Databases
- Logic and Data

In Year 9
In year 9 student enhance their learning through deeper understanding of the fundamental content they covered in year 7-8. They are challenged with topics that will help build on and secure their prior knowledge. The units are designed to give them conceptual understanding of the topics through the use of various software packages building on their IT skills and knowledge through the use of various software applications.

- Computational Thinking
- Hardware and software
- Python Programming
- Data Representation in CS
- Relational Databases
- Spreadsheet advance

KEY STAGE 4 (YEARS 10-11)

GCSE Computer Science

Computer Science is of enormous importance to the economy. It is a rapidly growing 'underpinning' subject across Science and Engineering. It caters for the demands of the modern world in mind, such as the need for mobile & web applications, game development and cyber security solutions. With this practical and highly creative subject students will be able to use the knowledge and skills they learn in the classroom to solve real-world problems that calls on them to be inventive.

Year 10 CS

Assessment overview J277

Component	Marks	Duration	Weighting	
Computer systems (01)	80	1 hour 30 mins	50%	Calculators **not** allowed
Computational thinking, algorithms and programming (02)	80	1 hour 30 mins	50%	Calculators **not** allowed

Content overview

Component 01: Computer systems

Introduces students to the central processing unit (CPU), computer memory and storage, data representation, wired and wireless networks, network topologies, system security and system software. It also looks at ethical, legal, cultural and environmental concerns associated with computer science.

Component 02: Computational thinking, algorithms and programming

Students apply knowledge and understanding gained in component 01. They develop skills and understanding in computational thinking: algorithms, programming techniques, producing robust programs, computational logic and translators.

Practical programming

Students are to be given the opportunity to undertake a programming task(s) during their course of study which allows them to develop their skills to design, write, test and refine programs using a high-level programming language. Students will be assessed on these skills during the written examinations, in particular component 02 (section B).

https://www.ocr.org.uk/qualifications/gcse/computer-science-j277-from-2020/

Year 11 CS – J276

COMPUTER SYSTEMS
COMPONENT 1

- Study how processors work.
- Investigate computer memory and storage.
- Explore modern network layouts and how they function.
- Build skills in the ever important realm of cyber security.
- Investigate how types of software are used within computer systems.
- Stretch wider comprehension of how computers and computing affect ethical, legal, cultural and environmental issues.

COMPUTATIONAL THINKING, ALGORITHMS AND PROGRAMMING
COMPONENT 2

- Study fundamental algorithms in computer science.
- Build a firm foundation in programming techniques.
- Produce programs through diagrams.
- Thoroughly test programs and make them resistant to misuse.
- Explore Boolean algebra (AND, OR, NOT).
- Understand how we store data within computers in binary form.

A PROGRAMMING PROJECT*
- Use new-found programming skills on an independent coding project by solving a real-world problem.
- Students will spend 20 classroom hours engaging with the Programing Project.

*Subject to change

https://www.ocr.org.uk/qualifications/gcse/computer-science-j276-from-2016/

OCR Cambridge Nationals Information Technologies Level 1/2 Certificate – J808

Data Manipulation and Project Management are vital skills for success in employment and higher education and are among the key transferable skills required by employers. Cambridge National in Information Technologies develops students understanding of these skills through the development of creative products to solve real world data problems. Taking this qualification will prepare students for a career in a data driven future.

Year 10 & 11 IT

Unit 1 – R012 – Understanding tools, techniques, methods and processes for technological solutions (EXAM - 50%)

- Knowledge of hardware and software applications.
- Data Manipulation tools and techniques.
- Project Life Cycle – phases, interaction, inputs and outputs.
- Risks, legal moral, ethical and security issues.

Unit 2 – R013 – Developing technological solutions (Coursework - 50%)

- Focus on the use of skills to develop a creative technological solution to a real world problem.
- Follow a project life cycle and demonstrate skills such as SWOT analysis, GANTT charts, data collection and presenting data.
- Use hardware and software to create an integrated technological solution for data processing and communication of information.

https://www.ocr.org.uk/qualifications/cambridge-nationals/information-technologies-level-1-2-j808/

KEY STAGE 5 (YEARS 12-13)

OCR Cambridge Technical Level 3 IT Extended Certificate

This qualification aims to develop students' knowledge, understanding and skills of the principles of IT and Global Information Systems. Students will gain an insight into the IT sector as they investigate the pace of technological change, IT infrastructure, the flow of information on a global scale, and the importance of legal and security considerations.

Units
Unit 1 – Unit 1 – Fundamentals in IT (EXAM)

- Understand computer hardware and software
- Understand business IT systems
- Employability and communication skills
- Ethical and operational issues and threats to a computer

Unit 2 – Unit 2 –Global information Global information Global information (EXAM)

- Where information is held and transmitted globally

- Management of global information systems
- Benefits to individuals and organisations of global information
- Legal framework and flow of information

Unit 3 – Unit 3 –Cyber security Cyber security Cyber security (EXAM)

- Understand cyber security and the issues surrounding it
- Measures and management of cyber security

2 optional units from: Project management, Product development, System analysis and design, internet of everything*
Units will be chosen dependant the cohorts strengths.

Assessment

Unit 1 and 2 are 50% of the course, assessed by a 90-minute written exam.
Unit 3 is worth 1/6th of the course and assessed by a written exam.
Two optional units are worth 2/6th of the course and are coursework.

UCAS Points:

Grade	UCAS Tariff points
D*	56
D	48
M	32
P	16

https://www.ucas.com/undergraduate/what-and-where-study/entry-requirements/ucas-tariff-points

https://www.ocr.org.uk/qualifications/cambridge-technicals/information-technology/#level-3