Year 10 COMPUTER SCIENCE Curriculum Map

https://www.ocr.org.uk/Images/558027-specification-gcse-computer-science-j277.pdf

Term	Topic/Unit title	Essential knowledge and skills (what students should know, understand and be able to do by the end of the unit/topic)
Autumn 1	2.2.1 Programming fundamentals (introduction) 2.1.1 Computational thinking 1.2.4 Data storage – Numbers, Characters, Images, Sound 1.2.3 Units 2.1.2 Designing, creating and refining algorithms	See content for each section in this document: https://www.ocr.org.uk/Images/558027-specification-gcse-computer-science-j277.pdf
Autumn 2	2.2.1 Programming fundamentals 2.2.2 Data types 1.1 – Systems architecture 1.2 – Memory and storage (except 1.2.3 & 1.2.4)	
Spring 1 & 2	2.2.3 Additional Programming Techniques – use of basic string manipulation – use of arrays when solving problems including 1-D and 2-D arrays	

	2.3 Producing robust programs 2.1.3 searching and sorting algorithms	
Summer 1	Revision recapping topics for Year 10 exam	
Summer 2	Programming Task	This is required by the exam board to give students experience in coding a solution to a more complex problem than can normally be attempted in a single lesson. Students learn by trying out ideas and researching the python language looking for suitable sample code

Year 11 COMPUTER SCIENCE Curriculum Map

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Term	Topic/Unit title	Essential knowledge and skills (what students should know, understand and be able to do by the end of the unit/topic)
Autumn 1	2.2.3 Additional Programming Techniques	• Practical use of the additional programming techniques in a high-level language within the classroom

	The use of basic file handling operations.
	
	The use of records to store data
	
	How to use sub programs to produce structured code
	
	The use of SQL to search for data
	
	Random number generation
	
	1.3.1 Networks and topologies
		
		• Use of 2D arrays to emulate database tables of a collection of fields, and records
		
		• The use of functions
		• The use of procedures
		• Where to use functions and procedures effectively
		• The use of the following within functions and procedures:
		• local variables/constants
		• global variables/constants
		• arrays (passing and returning)
		• SQL commands:
		  ○ SELECT
		  ○ FROM
		  ○ WHERE
		• Be able to create and use random numbers in a program
		
		• Types of network:
		  ○ LAN (Local Area Network)
		  ○ WAN (Wide Area Network)
		• Factors that affect the performance of networks
		• The different roles of computers in a client-server and a peer-topeer network
		• The hardware needed to connect stand-alone computers into a Local Area Network:
		  ○ Wireless access points
		  ○ Routers
		  ○ Switches
		  ○ NIC (Network Interface Controller/Card)
		  ○ Transmission media
		• The Internet as a worldwide collection of computer networks:
		  ○ DNS (Domain Name Server)

	1.6.1 Ethical, legal, cultural and environmental impact	○ Hosting ○ The Cloud ○ Web servers and clients • Star and Mesh network topologies Impacts of digital technology on wider society including: • Ethical issues • Legal issues • Cultural issues • Environmental issues • Privacy issues ¨ Legislation relevant to Computer Science: • The Data Protection Act 2018 • Computer Misuse Act 1990 • Copyright Designs and Patents Act 1988 • Software licences (i.e. open source and proprietary)
Autumn 2	Preparation for PPE	

Spring 1/Autum 2 (post PPE)	1.4.1 Threats to computer systems and networks
	
	1.4.2 Identifying and preventing vulnerabilities
	
	Addressing weaknesses from the PPE
		• Forms of attack:
		  ○ Malware
		  ○ Social engineering, e.g. phishing, people as the 'weak point'
		  ○ Brute-force attacks
		  ○ Denial of service attacks
		  ○ Data interception and theft
		  ○ The concept of SQL injection
		• Common prevention methods:
		  ○ Penetration testing
		  ○ Anti-malware software
		  ○ Firewalls
		  ○ User access levels
		  ○ Passwords
		  ○ Encryption
		  ○ Physical security

Spring 2/Summer 1	Preparation for exams	