KS4 Computer Science Curriculum Plan 2014-15

AQA GCSE Specification - 5 hours per fortnight

http://filestore.aqa.org.uk/subjects/AQA-GCSE-COMPSCI-W-SP.PDF

Full details of the units:

Topic	Content summary
Constants, variables and data types	Understand why programs have different types of variables and that there is a clear distinction between data and information
Structures	Structures are used to store different types of data. Use structures in programming explaining why they can make code simpler.
Program flow control	Understand that problems can be broken down into smaller tasks. Identify how flowcharts and structure diagrams can be used to break down tasks into manageable parts. Use of sequence, selection and iteration to solve problems.
Procedures and functions	Use pre-created procedures and functions in programs. Understand that students can create their own procedures and functions to pass parameters and return values.
Scope of variables, constants, functions and procedures	Understand that variables, functions and procedures have scope in a program. Identify how the values of variables change in a program.
Error handling	Errors in code are inevitable. Finding and resolving errors is important and with the use of inbuilt tools, they can be traced and rectified. Identify how and why errors occur in programming.
Handling external data	Understand that data is saved externally in files and also in databases. Use databases and files to store and retrieve data in your program.
Computer Systems; hardware, CPU, memory and secondary storage	Understand that computers systems are made up of different hardware components. For each topic area, explain what the role of the component is and how it links to the system
Algorithms	Understand that algorithms are computational solutions that always return a result. Identify and utilise algorithms to solve problems.
Data representation	Understand that computers use Binary to represent data. Be able to convert between binary, denary and hexadecimal number systems. Understand how ASCII code is used to represent characters.
Software development life cycle	Understand that different lifecycle systems being used and explain each stage of the lifecycle.
Prototyping	Explain what prototyping is and how it is used to rapidly create programming solutions.
Application testing	Understand the need for testing and the types of testing that can be applied to programs.
Networking, Client server and Web application concepts	Understand how computers communicate through networks and the different topologies being utilised. Understand the client server model and handshaking when communicating between client and server.
Use of external code sources	Explain how external code can be utilised in programs with the advantages and disadvantages that this offers.
Database concepts, Query methods (SQL) and Connecting to databases	Understand that databases hold data in a relational format that is accessible by programs. Use SQL to retrieve, edit and store data through web based applications.
Computer technology in society	Understand that computer technology has an impact on society.