

WHSB COMPUTER SCIENCE LOWER SCHOOL CURRICULUM MAP



KEY STAGE TWO PRIOR LEARNING INFORMS

YEAR 7

1

CONTENT
 School Systems & Baseline
 E-Safety: Passwords, CEOP, Netiquet
 Modelling with spreadsheets
 Formatting, Formulae & Cell referencing
 Charts

SKILLS
 Practical skills - Using the school systems safely and effectively
 Understanding - the role of computers in modelling



Baseline test in 1st half term
 Topic Test

2

CONTENT
 Binary Counting, Binary Addition, Logic Gates, ASCII
 Scratch sprites and animation
 User inputs & object interactions
 Simple Ais

SKILLS
 Practical skills - Programming constructs, procedural coding.
 Understanding - how computers use Binary



Topic Tests
 Core Practical Task

3

CONTENT
 Network geographical sizes
 Topologies - Bus, Star, Ring
 Packets and TCP/IP protocol
 Flowcharts
 Pseudocode

SKILLS
 Practical skills - written representation of algorithms
 Understanding - Purpose and role of hardware along with networks



Topic Test
 End of Year examination

YEAR 8

1

CONTENT
 HTML Tags & base page
 Page wide and site wide CSS
 Logic Gates
 Hardware and Operating Systems

SKILLS
 Practical skills - Coding in HTML using a written language
 Understanding - How the operating system interacts with hardware



Topic Tests
 Core Practical Task

2

CONTENT
 Logic Gates
 Boolean Algebra, Truth Tables
 Flow charts from truth tables
 Trace tables

SKILLS
 Practical skills - Construct logic gate circuits to achieve desired outcomes
 Understanding - algorithm design and testing techniques



Topic Tests
 Core Practical Task

3

CONTENT
 Types of database, Queries, Boolean operators
 Report outputs / Form inputs
 Python introduction
 Inputs/ outputs
 Sequence/selection/ iteration

SKILLS
 Practical skills - Programming constructs, procedural coding and functions
 Understanding - Role of databases in modern society



Topic Test
 End of Year examination

YEAR 9

1

CONTENT
 Dec to Bin converter, arrays
 Linear / Binary Search
 Microbits - Robot control
 Feedback loops and sensors

SKILLS
 Practical skills - writing programs that interact with the real world
 Understanding - data structures that can be used to write complex code



Topic Tests
 Core Practical Task

2

CONTENT
 Binary Conversion, Binary Addition
 Bit Shifting (multiply / divide)
 Caesar Cipher
 Key Protocols
 TCP/IP Packets - DNS, VPNs

SKILLS
 Practical skills - implement algorithms in a high level language
 Understanding - The role of protocols in networking



Topic Tests
 Core Practical Task

3

CONTENT
 Network security - Spear fishing, Wifi exploits & social engineering, VPN, disaster recovery
 Exam style coding challenge

SKILLS
 Practical skills - writing code to complete set tasks
 Understanding - awareness of wider security exploits on the internet



Topic Test
 End of Year examination

WHSB COMPUTER SCIENCE MIDDLE SCHOOL CURRICULUM MAP



LOWER SCHOOL PRIOR LEARNING INFORMS

YEAR 10

1

CONTENT
 2.2 - Programming fundamentals
 2.1 - Linear Search
 2.1 - Binary Search
 2.1 - Bubble Sort
 2.1 - Insert Sort
 2.1 - Merge Sort

SKILLS
 Practical skills - Programming all key algorithms in a high level language
 Understanding - Key programming structures and comparison of key algorithms



Repl.it assignments
 Online Multiple Choice

2

CONTENT
 1.2 - Units and Storage
 1.2 - Binary and Hex Conversion
 1.1 - Fetch Execute Cycle
 1.1 - Embedded Systems

SKILLS
 Practical skills - Algorithmic approach to number conversions and mathematic functions
 Understanding - fundamentals of how computers store and manipulate data



Unit test
 Repl.it assignments
 Online Multiple Choice

3

CONTENT
 2.2 - Data types
 2.2 - Algorithm Design
 2.3 - Testing
 2.5 - Programming Languages
 2.5 - IDEs

SKILLS
 Practical skills - Designing algorithms to achieve a set goal and plan suitable testing
 Understand - how binary can be used to store a variety of information



Unit test
 Repl.it assignments
 Online Multiple Choice
 End of Year Examination

YEAR 11

1

CONTENT
 1.5 - Operating Systems
 1.5 - Utility Software
 1.2 - Compression
 2.4 - Boolean Logic

SKILLS
 Practical skills - Implementing a Run Length Encoding compression algorithm and use of logic operators
 Understanding - Roles of the operating system



Unit test
 Repl.it assignments
 Online Multiple Choice
 Trial Examination

2

CONTENT
 1.3 - Network structures
 1.3 - Network Protocols
 1.4 - Network Vulnerabilities
 1.6 - Ethical, Legal, Cultural, and Environmental impacts of digital technology Revision

SKILLS
 Practical Skills - Network technologies in practice (media, switches, Aps, etc)
 Understanding - Networks and wider implications of Computer Science on society



Unit test
 Repl.it assignments
 Online Multiple Choice

3

CONTENT
 Revision

SKILLS
 Past paper practice (including timed conditions) and examination technique
 Paper 1: Computer Systems
 Paper 2: Computational Thinking, Algorithms and programming



GCSE Summer Examination

GCSE EXAMINATION BOARD:
OCR (J277)

LINKS TO GCSE STUDY:

1.1, 1.2 - 1.1 The characteristics of contemporary processors, input, output and storage devices
 1.1, 1.5 - 1.2 Software and software development
 1.2, 1.3 - 1.3 Exchanging data
 1.2, 2.2, 1.4 Data types and data structures
 1.6 - 1.5 Legal, moral, cultural and ethical issues
 2.1 - 2.1 Elements of computational thinking
 2.1, 2.2 - 2.2 Problem solving and programming
 2.1 - 2.3 Algorithms
 2.1, 2.3 - 3.1. Analysis of the problem
 2.1 - 3.2 Design of the solution
 2.2, 2.3 - 3.3 Developing the solution
 2.3 - 3.4 Evaluation

ENRICHMENT OPPORTUNITIES:

BEBRAS Challenge
 Hacking Club
 Robotics Club

WHSB COMPUTER SCIENCE SIXTH FORM CURRICULUM MAP



MIDDLE SCHOOL PRIOR LEARNING INFORMS

LOWER SIXTH

1

CONTENT
 1.1 - The characteristics of contemporary processors, input, output and storage
 1.3 - Exchanging data
 1.4 - Data types, data structures and algorithms
 2.1 - Elements of computational thinking

SKILLS
 Practical skills – Programming constructs, procedural coding and functions.
 Understanding – Purpose and role of hardware along with networks



Baseline, Topic Tests
 Core Practical Tests
 Online Multiple Choice
 Programming Assignments

2

CONTENT
 1.3 - Exchanging data
 1.4 - Data types, data structures and algorithms
 2.2 - Problem solving and programming

SKILLS
 Practical skills – Programming all key algorithms including recursion
 Understanding – Boolean algebra and floating point arithmetic



Topic Tests
 Core Practical Tests
 Online Multiple Choice
 Programming Assignments

3

CONTENT
 1.2 - Software and software development
 2.3 - Algorithms
 3.1 - Analysis of the problem

SKILLS
 Practical skills – Path finding algorithms, Object Oriented Design, and developing their own complex algorithms
 Understanding – Software development processes and expectations for the final project



End of Year Examination
 Topic Test
 Online Multiple Choice
 Project Analysis

UPPER SIXTH

1

CONTENT
 1.5 - Legal, moral, cultural and ethical issues
 2.3 - Algorithms
 3.2 - Design of the solution
 3.3 - Developing the solution

SKILLS
 Practical skills – Object Oriented Design and building complex algorithms
 Understanding – Legal and moral concepts, The role of the operating system and BigO notation



Topic Tests
 Core Practical Tests
 Online Multiple Choice
 Project Design Submission

2

CONTENT
 Trial Examination
 1.2 - Software and software development
 2.2 - Problem solving and programming
 3.4 - Evaluation

SKILLS
 Practical skills – Completing the project a culmination of the programming skills covered in the course
 Understanding – Application of topics in a written format suitable for the final examination



Topic Tests
 Core Practical Tests
 Online Multiple Choice
 Project Submission

3

CONTENT
 Revision of all content covered

SKILLS
 Past paper practice (including timed conditions) and examination technique
 Paper 1: (2h 30m)
 Computer Systems
 Paper 2: (2h 30)
 Algorithms and Programming



A- Level Examinations

A LEVEL EXAMINATION BOARD:
OCR (H446)

PREPARATION FOR UNIVERSITY AND DESTINATIONS:

Careers:
 Applications developer
 Cyber security analyst
 Data analyst
 Database administrator
 Forensic computer analyst
 Game designer
 Games developer
 Information systems manager
 IT consultant
 Software engineer
 Systems analyst
 UX designer
 Web designer
 Web developer
 Finance and Banking

ENRICHMENT OPPORTUNITIES:

BEBRAS Challenge
 Hacking Club
 Robotics Club
 Museum of Computing Museum