THE WINSFORD ACADEMY

KS4 GCSE Computer Science Learning Journey

A Level Computer Science
BTEC Computer Science

Exams

OCR

Paper 2 Exam
1 ½ hours

Paper 1 Exam
1 ½ hours

Exam techniques

Past papers

Multiple Choice questions

Review of theory

Revision

Programming Project

Minimum 20 hours

Python based

Teacher-led

2.5 Programming languages and IDEs

Compliers and interpreters

Purpose of translators

High and Low level languages

Basic IDE tools and facilities

YEAR 11

2.4 Boolean Logic

Use of truth tables to solve problems

Truth tables

Input A	Input B	Output
0	0	0
1	0	1
0	1	1
1	1	1

Combining multiple gates

Simple logic gates AND OR NOT

AND NAND OR NOR NOT XOR XNOR

2.3 Producing robust programs

Refining algorithms

Testing data Types (normal, boundary, Invalid, erroneous)

Maintainability

Testing
- Iterative
- Final

Defensive design (authentication)

Input validation

2.2 Programming fundamentals

Data Types

File handling operations

Use of SQL

Functions and procedures

Boolean operators AND OR NOT

Sequence
Selection
Iteration

String Manipulation

1d and 2d arrays

Random number generation

Arithmetic operators + − ÷ ×

Variables & constants

2.1 Algorithms

Binary Search
Linear Search

Flowcharts

Computational Thinking

Bubble Sort
Merge Sort
Insertion Sort

Trace tables

Pseudocode

Abstraction, Decomposition & Logical Thinking

1.6 Ethical, legal, cultural, & Environmental impacts of technology

Legislation

Impacts on society

Purposes and functions of utility software

1.5 Systems Software

Purposes and functions of operating systems

1.4 Network Security

Identifying weakness and preventative measures

Means of attacking systems

1.3 Computer networks, connections & protocols

Types of networks LAN / WAN & topologies

Compression

Performance

Wired & Wireless

Text, Audio, Image representation

Binary numbers including addition

Binary, Denary Hexadecimal,

Client-Server
Peer-2-Peer

Network Hardware

The internet as a server

Encryption and protocols

Units of storage

Suitability for tasks / Pros and cons of each

Optical
Magnetic
Solid State

1.1 Systems Architecture

The need for secondary storage

How to improve CPU performance

Von Neumann Architecture

The purpose of the CPU

YEAR 10

1.2 Storage and memory

Primary storage ROM / RAM / VM

Embedded Systems

CPU components

Fetch Decode Execute cycle

welcome