



Edition 5
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COMPUTER SCIENCE

Curriculum Newsletter

YEAR 12

Contact



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Curriculum Intent

In Computing we aim to provide an engaging, challenging, well sequenced curriculum which is broad and balanced, covering a range of computing and ICT topics. We aim to develop our students into 21st Century Digital Citizens who are able to use digital technology safely and responsibly, and to teach students both how to use technology effectively, with an understanding of how it works.

We aim to engender a love of learning, self-belief and aspiration through 4 key intentions:

- The Removal of Barriers to Learning
- Developing Skills for Learning
- Developing Personal Attributes
- Enriching Student Experiences and Broadening their Horizons

The Computing and IT Department's core purpose is to deliver an engaging and challenging curriculum through outstanding teaching and learning. Our aim is for students to develop skills and knowledge in digital technologies and computer science, to prepare them for a future in a world where the use of this technology is fully embodied.

Year 12 Curriculum

The Characteristics of Contemporary Processors, Input, Output and Storage Devices

The structure and function of the CPU is explored, looking at the key components, factors affecting performance, different CPU architectures and instruction sets.

Software and Software Development

In this topic we focus on the different types of software and the different methodologies used to develop software. Systems software is explored, looking at functions of the operating system, memory management, interrupts, scheduling and multitasking.

Exchanging Data

Here we look at compression, encryption and hashing - this includes lossy and lossless compression, run length encoding and dictionary coding for lossless compression and symmetric and asymmetric encryption. This topic also includes relational databases where the fundamental principles are covered.

Elements of Computational Thinking

Here we build an understanding of what is meant by computational thinking, focussing on thinking abstractly, thinking ahead, thinking procedurally, thinking logically and thinking concurrently to develop a structured and methodical approach to problem solving.

Problem Solving and Programming

This topic is about how computers can be used to solve problems and programs can be written to solve them. We look at programming techniques including recursion and object orientation. We also cover computational methods such as decomposition, backtracking, data mining, heuristics, performance modelling, pipelining and visualisations.

Programming Project

Towards the end of Y12, students will begin to explore the programming project which makes up 20% of their final grade. Students will be expected to analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The underlying approach to the project is to apply the principles of computational thinking to a practical coding problem. Students are expected to apply appropriate principles from an agile development approach to the project development.

Assessment Points

A Level Computer Science - H446 - OCR

Formal assessment for this course comes at the end of Year 13, where students will sit two exams (worth 40% each) and submit a piece of coursework (worth 20%). In Year 12, students are assessed at the end of each topic, roughly once per half term. Assessments are in a variety of formats including short and long answer written questions, multiple choice questions and practical tasks. In addition to end of topic assessments, students sit a mini mock in January, followed by a full mock in May.

Immerse Yourself

Isaac Computer Science

- ✓ Develop Skills
- ✓ Online Exam Practise
- ✓ Computer Science Revision at home

OCR Seneca Revision

- ✓ Get Revising Quicker!
- ✓ Large Variety of Topics
- ✓ Study Support and Revision

These are some great educational tools to help students when revising.

If they are struggling with topics in lessons or want to enhance their learning in the classroom then these links are an ideal place to cover content at home.

Test Your Knowledge...

These past A Level Computer Science papers are a fantastic way to memorise relevant terms to help you with your studies. Click on the icon below to start!



Praise and Reward

Our rewards system can be broadly split into four categories: classroom level, subject level, school level and privilege rewards. We'll focus on classroom and subject rewards here - for more information about our rewards schemes, please see our website.

CLASSROOM LEVEL REWARDS

Awarded for: working hard, taking risks and rising to a challenge, making mistakes and learning from them, helping others, and taking pride in the school community.

Rewarded by: praise postcards, positive phone calls to parents/carers, positive text messages home, and lesson-based prizes.

SUBJECT LEVEL REWARDS

Reward scheme: Star of the Week, curriculum awards (Subject/School Way, participation, working with pride, embracing the whole curriculum), high flyer, extra mile, most improved.

Rewarded by: names displayed on reward boards, certificates, social media posts.

Broadening Horizons

We aim to broaden horizons by introducing software tools that can be used for a wide range of purposes. Many of the tools introduced are free and available for students to use at home.

We ensure that students understand how software can be used in the real world, e.g. to plan an event or manage finances. We also introduce students to hardware and software that many students may not have access to outside of school, including Micro:bits, the Adobe suite, Microsoft Office, Chromebooks and PCs.



Software Engineering: Computer Science

Crash Course discuss how large programs are typically broken up into into function units that are nested into objects known as Object Oriented Programming, as well as how programmers write and debug their code efficiently, document and share their code with others. Click on the logo to find out more!

Computer Science - University Student Talk

Hear a Computer Science student at university talk about their experience on the course, and get an insight into what you can expect should you choose to pursue it yourself. Click on the logo to watch!



Careers

We run a series of 'Careers in the Curriculum' weeks in our school. For ICT, this week takes place in December. Students take part in a number of activities to encourage them to think about how what they learn in the classroom can be applied in a number of future careers including: IT Manager, Software Developer, Data Scientist, Web Developer and Information Security Analyst.

Click on the logo below for more information on career options in Computing!



The Computing Way

The Computing Way is designed to help students become young subject specialists and has a key focus on the vital skills needed to achieve their full potential in this subject area.



Have your say! ✨

At WPT we're always looking for feedback. If you have any thoughts/opinions on this Curriculum Newsletter, its content or the curriculum in general, please click on the title to fill out a short feedback form.