

Computing Curriculum Statement – 2023-24

INTENT:

The teaching of Computing at Great Western Academy aims to support students to become confident problem solvers who revel in the challenges that Computer Science can present. In order to help our students to become robust critical thinkers, we equip them with a range of computational methods, paired with a wide range of technical vocabulary to deepen their understanding and later application of the content. Our Computing curriculum aims to prepare students for a range of careers in an increasingly digital world, where not only are they digitally literate in a range of software, but independent and innovative creators, ready to change the world.

We are passionate in our support of the school’s overarching vision; for students to be ACE. We focus on Achievement, supporting students to make rapid progress from each starting point; on Care, encouraging students to lead happy, safe, and successful lives – particularly through their understanding of the challenges faced in the modern world; and on Excellence, supporting students to be truly aspirational and to achieve more than they first thought possible.

Key Stage 3:

Students at Great Western Academy will benefit from a robust spiralling curriculum where key theory and skills are revisited annually to ensure success. Our curriculum has been designed to exceed the expectations set out by the National Curriculum

The Computing department is committed to supporting whole school Enterprise Skills. We have planned into our schemes of learning explicit teaching of ‘Skillsbuilder’ steps across these themes – Teamwork, Leadership, Creativity, Problem Solving, Listening and Presenting.

The key themes studied through Key Stage 3 are outlined below:

	Theory	Computational Thinking	Programming		Data	Project Management
Skillsbuilder	Listening	Problem Solving	Problem Solving	Creativity	Presenting	Team Working
Year 7	Laptop Use & E-Safety *9	Algorithms and Flowcharts *2	Beginners MakeCode & Micro:Bits *1 3	Programming and Halos *1 3	Excel *7	Publisher *7 8
*Exceeds the expectations of the National Curriculum bullet point for KS3						
Year 8	Network Security *9	Beginners Computational Thinking *2	Advanced MakeCode *1 3	Programming and Robots *1 3	Number Bases – Binary, Denary, Hexadecimal *4 6	Visual Identity (Photoshop) Or PowerPoint – Computing Past, Present and Future. *5
*Exceeds the expectations of the National Curriculum bullet point for KS3						
Year 9	Ethics *9	Advanced Computational Thinking *2	Python Programming *1 3		Data Representation *6	CPU Architecture *5
*Exceeds the expectations of the National Curriculum bullet point for KS3						

Key Stage 4:

All students that follow the full Key Stage 3 Computing curriculum will be fully equipped to study any of the three different pathways into GCSE which are outlined below:

- OCR GCSE Computer Science

Students will engage in a course that is practical, encourages creativity and promotes problem solving. The course supports students to develop their understanding and application of the core concepts of computer science. Students also learn to analyse problems in computational terms and devise creative solutions by designing, writing, testing, and evaluating programs. The course is split into two key themes, each with a range of units:

1. Computer Systems
 - 1.1 Systems architecture
 - 1.2 Memory and Storage
 - 1.3 Computer networks, connections and protocols
 - 1.4 Network Security
 - 1.5 Systems software
 - 1.6 Ethical, legal, cultural and environmental impacts of digital technology

2 Computational Thinking, Algorithms and Programming

- 2.1 Algorithms
- 2.2 Programming fundamentals
- 2.3 Producing robust programs
- 2.4 Boolean logic
- 2.5 Programming languages and Integrated Development Environments

This pathway is ideal for students who want to continue to develop their programming knowledge and application skills.

- OCR Cambridge Nationals in Creative iMedia

This course will inspire and equip students with the confidence to use the skills that are relevant to the digital media sector. Students will design, plan, create and review digital media products to meet client and target audience demands. The qualification is split into three components:

- Written exam paper on The Media Industry.
- Centre Assessed Task on Visual identity and digital graphics.
- Optional Centre Assessed Task on one of the following:
 - Characters and comics:
 - Animation with audio:
 - Interactive digital media:
 - Visual imaging
 - Digital gaming

This pathway is ideal for students wanting to develop the creative skills developed in the KS3 Computing curriculum

**This pathway will be first available in September 2022.*

Key Stage 5:

A-Level Computer Science

Our Sixth Form students can continue their studies of Computer Science by studying the OCR A-Level in Computer Science. This A Level Computer Science qualification helps students understand the core academic principles of computer science. Classroom learning is transferred into creating real-world systems through the creation of an independent programming project. Our A Level students will develop their technical understanding and their ability to analyse and solve problems using computational thinking. The three components studied include:

- Component 01: Computer systems

Students are introduced to the internal workings of the (CPU), data exchange, software development, data types and legal and ethical issues. The resulting knowledge and understanding will underpin their work in component 03. It covers:

- The characteristics of contemporary processors, input, output and storage devices
 - Types of software and the different methodologies used to develop software
 - Data exchange between different systems
 - Data types, data structures and algorithms
 - Legal, moral, cultural and ethical issues.
- Component 02: Algorithms and programming

This builds on component 01 to include computational thinking and problem-solving. It covers:

- What is meant by computational thinking (thinking abstractly, thinking ahead, thinking procedurally etc.)
 - Problem solving and programming – how computers and programs can be used to solve problems
 - Algorithms and how they can be used to describe and solve problems.
- Component 03: Programming project

Students are expected to apply the principles of computational thinking to a practical coding programming project. They will analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The project is designed to be independently chosen by the student and provides them with the flexibility to investigate projects within the diverse field of computer science. We support a wide and diverse range of languages.

Cambridge Technical – Information Technology – Level 3 (Introductory Diploma) (From Sept 2023)

Our Sixth Form students can continue their studies of Information Technology by studying the OCR CTEC Level 3 in Information Technology. Cambridge Technicals in IT qualifications helps students to achieve their potential and progress to the next stage of their lives, whether that's higher education, an apprenticeship or employment.

Mandatory Units:

- Unit 01: Fundamentals of IT
A sound understanding of IT technologies and practices is essential for IT professionals. Information learnt in this unit will provide a solid foundation in the fundamentals of hardware, networks, software, the ethical use of computers and how business uses IT.
- Unit 02: Global Information
The purpose of this unit is to demonstrate the uses of information in the public domain, globally, in the cloud and across the internet, by individuals and organisations. You will discover that good management of both data and information is essential, and that it can give any organisation a competitive edge.
- Unit 03: Cyber Security
This unit has been designed to enable you to gain knowledge and understanding of the range of threats, vulnerabilities and risks that impact on both individuals and organisations. You will learn about the solutions that can be used to prevent or deal with cyber security incidents resulting from these challenges. You will be able to apply your knowledge and understanding of cyber security issues and solutions by reviewing and making recommendations for ways to best protect digital systems and information.
- Unit 04: Computer Networks
The emphasis of this unit is to give you the practical ability to plan, implement and maintain computer networks. The approach adopted by this unit is 'bottom up' where you begin with a solid set of components, cables and connectors of a network and then progressively build a networking capability. The range of protocols has been deliberately limited to those which are used in the vast majority of computer networks, TCP/IP and Ethernet.
- Unit 17: Internet of Everything
This unit is about the use of the internet and how it is impacting people and society. You will learn about the Internet of Everything (IoE) and how it is used. Using your knowledge, you will carry out a feasibility study for a potential idea. You will pitch your idea to potential stakeholders and use their feedback to revise your proposal.

IMPLEMENTATION:

Each scheme of work is designed to outline what we teach to ensure the intent of our curriculum is delivered across each key stage.

Our schemes of learning include:

Long term overviews:

- Interleaving of prior learning
- Topic outline summarising key content

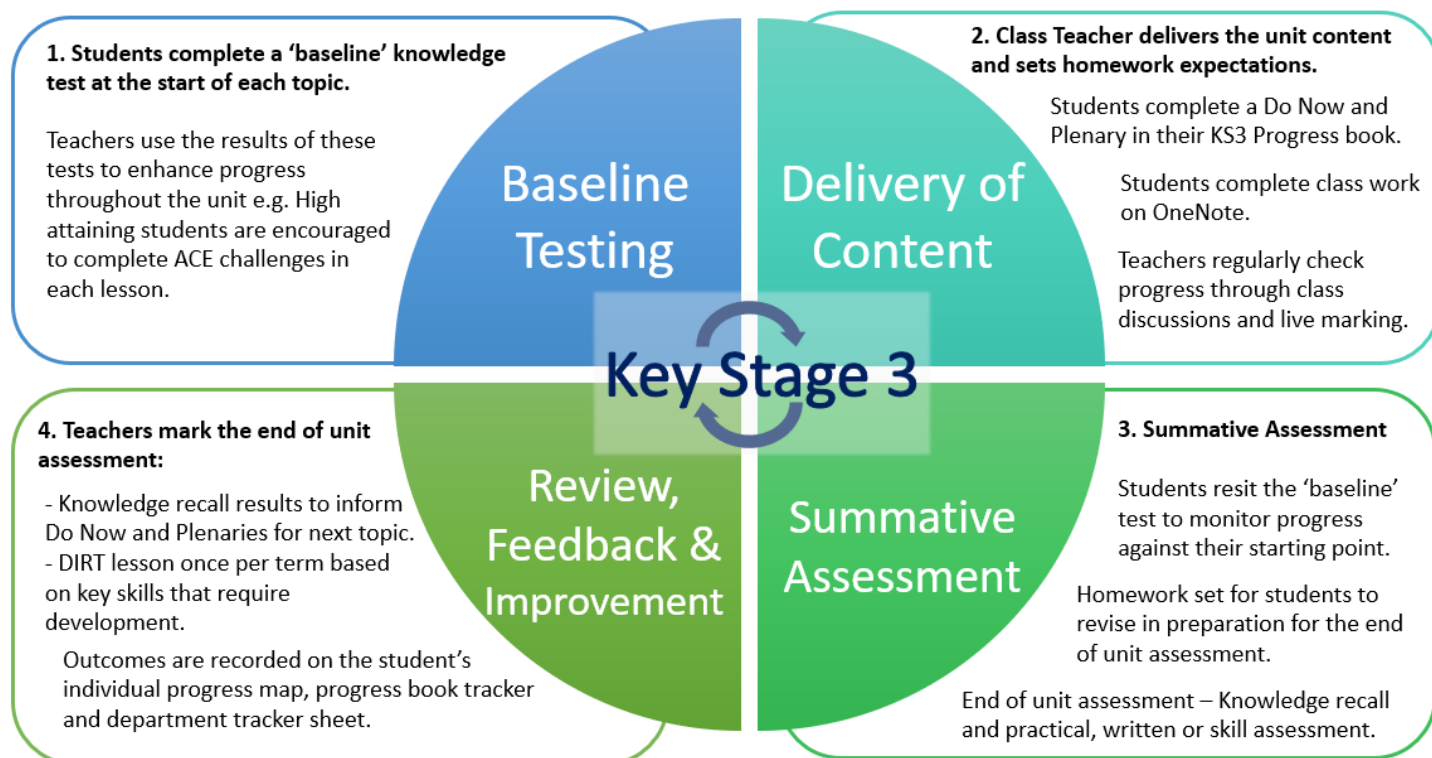
Medium term plans:

- Root enquiry and key enquiry questions
- Key Knowledge, Skills and Understanding (delivered through know, apply, extend learning objectives/outcomes)
- Duration
- Planned assessment of student progress and impact of taught curriculum
- Assessment and improvement opportunities (DIRT)
- SMSC
- Literacy and Numeracy
- Opportunities to extend learning
- Enterprise skills
- Appropriate challenge and differentiation opportunities

Assessment Cycle and Feedback Policy:

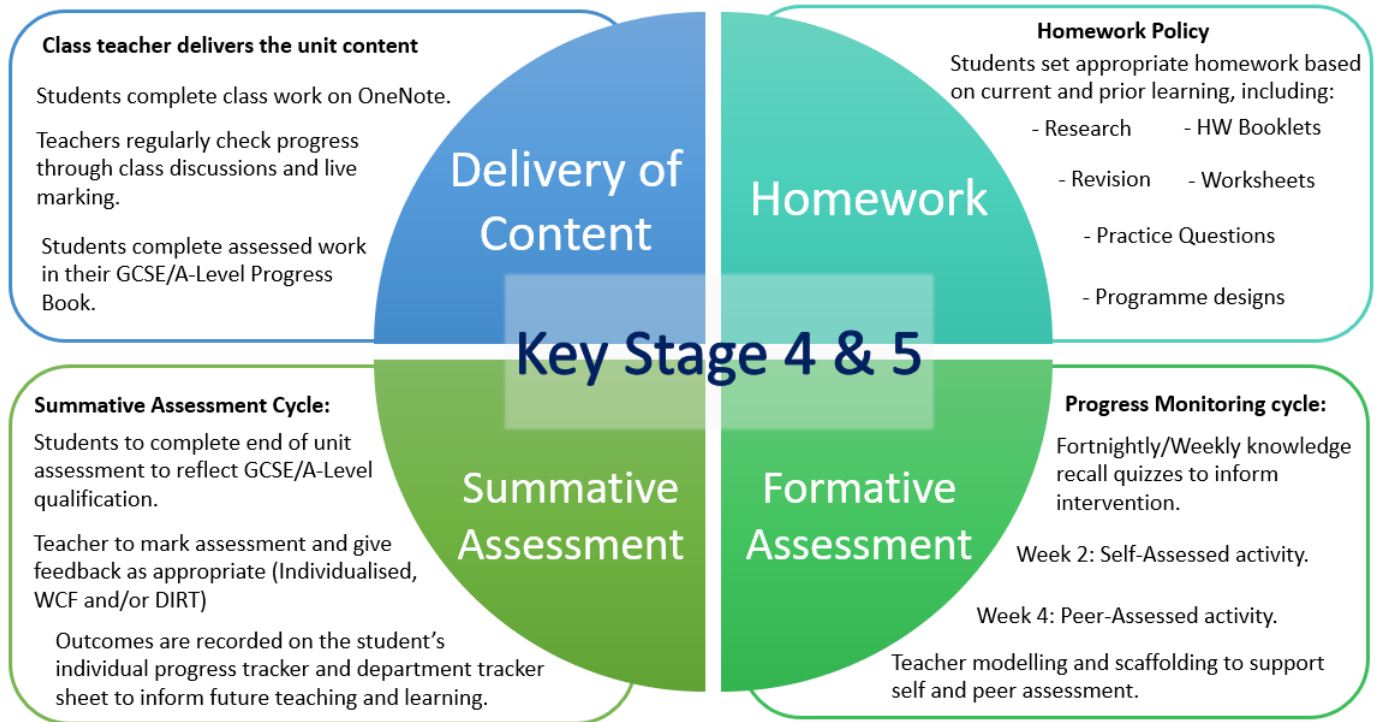
- Key Stage 3:

The Computing Department is dedicated to high quality teaching and learning. The assessment and feedback cycle below outlines the implementation of our curriculum to ensure maximum impact on student progress in Key Stage 3. Summative assessment will take place at the end of term 2, 4, and 6.



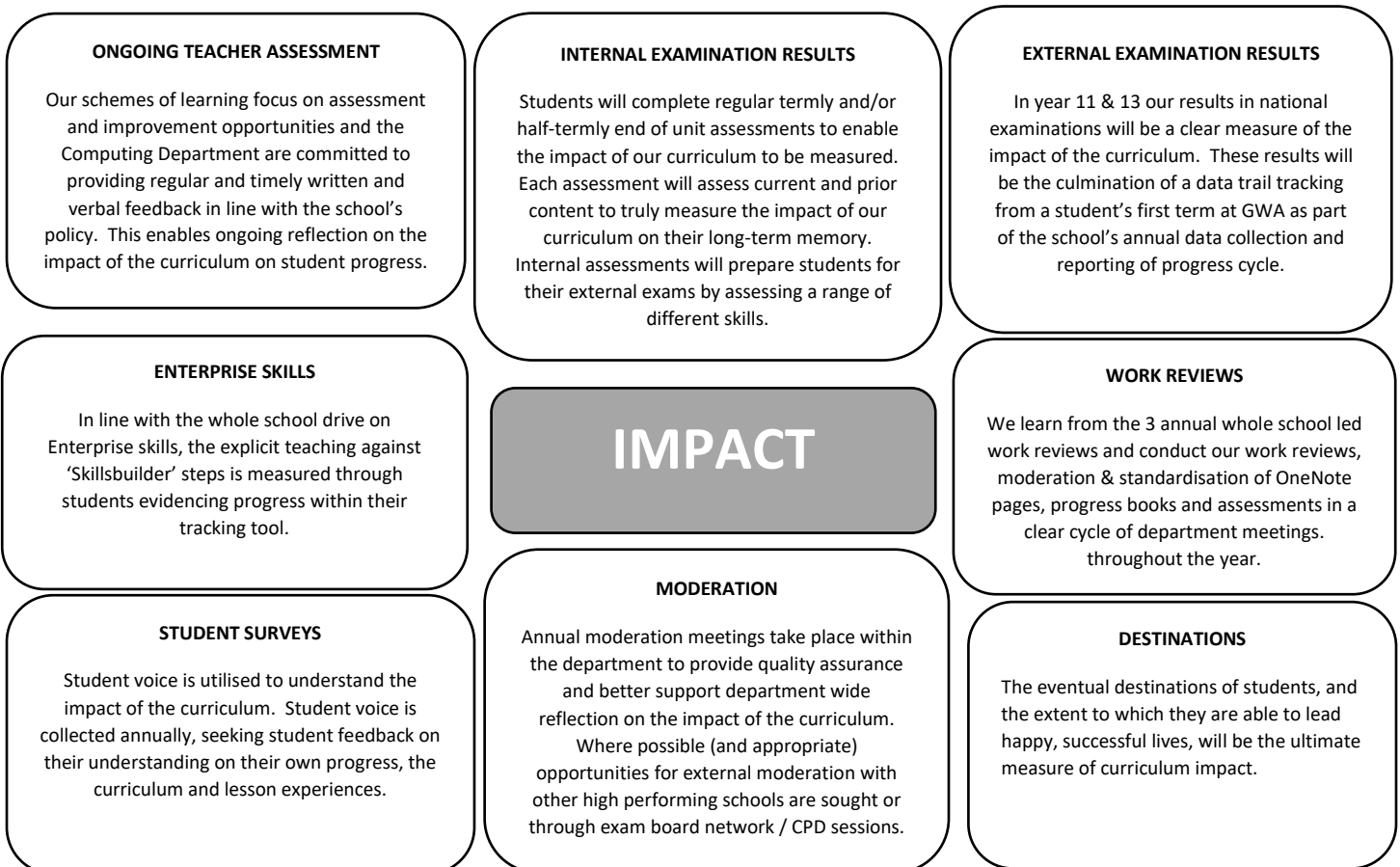
- Key Stage 4 and 5:

The Key Stage 3 assessment and feedback cycle feeds into that at Key Stage 4 and 5. Where student progress is monitored, again to secure maximum progress in each individual student. Homework is purposeful and feedback is regular and effective.



IMPACT:

All students of Computing centred subjects will be critical thinkers and successful problem solvers. Our students will have the knowledge, skills and creative abilities to succeed in Computer Science, Creative iMedia and IT.



Read the Department Improvement Plan for Business, Computing and Economics for more information.