

Curriculum Intent Statement for Computing

Intent

The computing curriculum at GM school is designed to equip pupils with computational thinking, problem solving and digital literacy skills, to be able to navigate real life challenges and the wider world of work. This is done through:

- Making students aware of the wide range of career options available to promote ambitious choices in the computing industry
- Increasing students' cultural capital by giving access to digital resources, in and outside of school, tackling the increasing digital divide, whilst also reducing the gender gap
- Providing students with meaningful qualifications and opportunities which enable them to be successful and achieve within school, in their lives and in their work after leaving us
- Enabling students to build an understanding of the wider ethical, legal and environmental issues with regard to computer use

Implementation

EYFS

Within the revised EYFS statutory framework, the Technology strand within Understanding the World has been removed. However, there are opportunities for children to effectively prepare for studying the computing curriculum.

Classrooms contain a range of technology i.e. functioning or model devices or a variety of electronic toys as part of continuous provision. Further technology is used in conjunction with other activities, such as digital cameras, and opportunities created to allow learners to tinker, or play, with a device, in order to explore how they function.

KS1 & KS2

Key Stages 1 & 2 follow the Teach Computing Curriculum and is taught in class groups in weekly 50-minute sessions. Each year, there are six computing units taught (one per half term) and each unit consists of six lessons. The materials have been designed to be suitable for all pupils irrespective of their skills, background, and additional needs.

The units for key stages 1 and 2 are based on a spiral curriculum. This means that each of the themes is revisited regularly (at least once in each year group), and pupils revisit each theme through a new unit that consolidates and builds on prior learning within that theme.

All learning outcomes can be described through evaluation of the following ten strands: Algorithms, Computer Networks, Computer Systems, Creating Media, Data and Information, Design and Development, Effective Use of Tools, Impact of Technology, Programming and, Safety and Security.

KS3

Key Stage 3 follows the National Curriculum and is taught in mixed ability groups over 2 hours per fortnight.

From the start to end of a topic, students work using a combination of theory based and practical based lessons, developing both skills and knowledge, and they are assessed on their understanding every half term. Knowledge is taught through modelling and scaffolding. Students are exposed to the core knowledge which they will require later on within KS4 (through the use of a spiralled curriculum) and also IT skills which will help them develop problems and become "digitally literate" later on within their academic careers.

Year 7

In year 7 we start to explore the world of computing. We learn about how to use the and communicate over the Internet in a safe and appropriate manner, and how computers work together. We also learn about how data is represented on computer systems and undertake projects involving the use of spreadsheets, block based and text based programming.

Units include

Online safety, computer systems, data representation, spreadsheets, programming using scratch (visual/block) and programming using python (text based)

Year 8

In year 8 we start to learn more about how different types of data are represented on computer systems. We look at how we can use algorithms and flowcharts to solve real world problems, understand issues that we may face while using the internet and how to combat these, as well as undertake further projects which include making a mobile game/app, and also enhancing our knowledge of python programming.

Units include

Data representation II, Algorithms and Flowcharts, Cyber security and Online safety, mobile app development, spreadsheets II and programming using python II

Year 9

In year 9 we focus on preparing students for their GCSE studies in Key Stage 4. Firstly, we enhance programming skills and computer science knowledge for those that will take GCSE Computer Science. Secondly, we engage in more theoretical understanding of computer systems by looking at the CPU and memory inside of a computer. We also learn more about images and sound and how they are represented on computers as well as understanding how all these computers communicate using networks. Lastly, we will undertake a project which involves applying several of the skills taught throughout KS3 and produce a solution to a real-world problem.

Units include

Networks and the Internet, algorithms (pseudocode and flowcharts), the CPU and memory, data representation III and python programming, with a final term project.

KS4

KS4 follows the AQA GCSE Computer Science (8525) exam board specification and is taught in mixed ability groups over 6 hours per fortnight. Students are taught both theory and programming lessons throughout the year so that the curriculum in line with the continuation of our spiralled curriculum within KS3.

GCSE Computer Science is a challenging course that covers the foundations of computer science theory and programming. Students learn logical thinking and problem solving skills which can be applied in a wide variety of work settings. Understanding the fundamentals of computer technology can help students to rapidly understand new application programs.

Units include: system architecture, data representation, computer networks, cyber security, databases, impact of technology on society, algorithms and programming

Enrichment Opportunities

Outside of the classroom, students have an opportunity to take part in a variety of enrichment activities to further develop their problem solving and computational thinking skills which include after school coding/robotics clubs, the annual Bebras Competition for both primary and secondary pupils and much more!

Supporting your Child

Helpful Resources

GCSE Computer Science revision - <https://studyrrocket.co.uk/revision/gcse-computer-science-aga>

<https://projecteuler.net> – If you have a mathematical mind and think you can really code then try Project Euler

BBC Key Stage 3 Bitesize: Computing

Where could Computing take you next?

Possible Careers in computing can be – Computer Games Developer, Mechanic, Cyber Security Specialist, Social Media Executive and more!