



AVANTI HOUSE

Excellence · Virtue · Devotion

2019-2020

Programmes of Study

Key Stage 3

Computer Science

COMPUTER SCIENCE

OVERVIEW OF COURSE

We want our students to understand and play an active role in the digital world that surrounds them and not to be passive consumers of an opaque and mysterious technology. In our lessons, students apply Computational Thinking (CT) as a problem solving process across a wide range of disciplines. Younger pupils will use Blockly based visual coding activities using the BBC Micro bit and basic Web Design. Older pupils are introduced to text based programming in Python and code questionnaires and quizzes. They have also design and code action games in Game Maker

PROGRAMME OF STUDY

Term	Year 7	Year 8	Year 9
Autumn 1	Control Systems with Flowol	HTML, CSS, and Website Development	Hardware, Software & Logic
Autumn 2			Computing Trends
Spring 1	Understanding Computers	Computer Crime and Cybersecurity	Introduction to Python
Spring 2	Introduction to Programming with BBC Microbit		
Summer 1	Image representation and Graphics with Photoshop	Project based programming with BBC Microbit	Programing with Game Maker (Platform Game)
Summer 2	Programming with Game Maker (Maze Games)		

SKILLS / KNOWLEDGE / UNDERSTANDING

The core recurring theme throughout KS3 Computing is for pupils to demonstrate understanding of and apply the key processes associated with Computational Thinking. Computational Thinking provides pupils with a framework to tackle problems, to break them down in solvable chunks and devise algorithms. Pupils should be able to design and write programs; debug, test and reason about programs both using visual coding and text based coding. Furthermore pupils should have an understanding of key algorithms and be able to use logical reasoning to compare alternative algorithms for the same problem. In addition to working with algorithms and programming pupils should be able to understand the hardware and software components that make up computer systems, understand how instructions are stored and executed within a computer system, understand simple Boolean logic, understand how numbers, text and images are represented in the form of binary digits and carry out simple operations such as binary addition. Moreover throughout KS3 pupils will have an opportunity use ICT to create a range of content with an emphasis on websites, images and sound. Pupils should be able to create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.

METHODS OF ASSESSMENT

Formative assessments:

- Machine based assessment which will include multiple choice questions will be used in more theoretical topics such as understanding computers, computer crime and hardware, software and logic.
- Where students have been working on an extended project; assessment will include a combination of formal questioning on the topic and portfolio evidence of pupils work. This may include evidence of testing and evaluation. Teacher feedback comments will be provided in Google Classroom and pupils will have an opportunity to act on comments before the end of their project.

Summative assessment:

- Open questioning will be used in lessons whilst students are programming and working on IT projects students will be regularly challenged with questions such as “Why did you choose to do it this way and not another?” and “Can you explain how that works?”.
- Homework at KS3 will be submitted digitally and will tracked through Google Classroom
- Self-assessment will be used as feature to encourage students to be independent learners, set their own goals for the following lesson and evaluate their work. This may take the form of a reflective blog for an extended project.
- Peer assessment may take place time to time to help the creator and assessor understand what a finished product may look like

HOW PARENTS / CARERS CAN HELP

You can support your child by asking them to show case and discuss programs and products they are producing in computing lessons at home. You may wish to provide feedback to help pupils improve their work. Pupils can be encouraged to complete the Duke of York Award in digital and enterprise skills. This is a set of online challenges that students can work their way through on idea.org.uk

EXTRA-CURRICULAR

Where possible the department aims to organise enrichment for students where they can handle cutting edge technology and work with Engineers, Technologists and Scientists to explore computing beyond the classroom. At KS3 students are encouraged to participate in the Teen Tech Awards where students use their imagination to think creatively to find better ways of doing things. We enter all our students in the annual Computational Thinking Bebras competition. Year 8 students have opportunity to take part in the Faraday challenge day where they compete against other local schools. More over the department has strong links with Cisco where students attend workshops to see cybersecurity, network and software development in action.

RECOMMENDED READING / OTHER RESOURCES

<http://microbit.org/code/>
<https://www.codecademy.com/learn/learn-python>
<https://www.bbc.com/education/subjects/zvc9q6f>
www.idea.org.uk