Curriculum Information Bramcote College

Year Group: Year 12

Subject: Computer Science

Objectives/purpose	Computer Science is a practical subject where students can apply the academic principles learned in the classroom to real-world systems. It's an intensely creative subject that combines invention and excitement, and can look at the natural world through a digital prism.
	The aims of this qualification are to enable learners to develop:
	• An understanding and ability to apply the fundamental principles and concepts of computer science, including: abstraction, decomposition, logic, algorithms and data representation
	• The ability to analyse problems in computational terms through practical experience of solving such problems, including writing programs to do so
	• The capacity to think creatively, innovatively, analytically, logically and critically
	• The capacity to see relationships between different aspects of computer science
	• Mathematical skills.
	It is divided into three components;
	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.
	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.
Autumn Term	1.1.1 Structure and function of the processor
	1.1.2 Types of processor
	1.1.3 Input, output and storage
	2.1 Elements of computational thinking
Spring Term	1.2.1 Systems Software
	1.2.2 Applications Generation
	1.2.3 Software Development
	1.3.3 Networks
	1.3.4 Web Technologies
Summer Term	1.2.4 Types of Programming Language
	1.3.2 Databases

	1.4.2 Data Structures 1.5.1 Computing related legislation 1.5.2 Moral and ethical Issues
How is progress measured?	Students will sit an assessment at the end of each unit to give them a current grade. Students are also expected to complete 4 hours of independent learning each week, in which time they will be given opportunities to develop their knowledge, exam technique and programming capabilities. Throughout the schemes of work students, are frequently asked to recall information in a series of low stakes testing scenario's and complete homework tasks to develop their independent learning and exam technique. This builds to a summative assessment which requires them to recall key information and demonstrate the exam technique they have developed.
How is the subject externally examined? (KS4 and KS5)	Students in Year 12 will be expected to sit two external AS examinations in May. This will give the students externally validated data and a valuable experience in order to prepare for the terminal exams in Year 13. The A level course is assessment via two external examinations and one programming coursework project. All of which will be completed in Year 13. Computer systems (01). 2hrs 30 minutes, worth 40%. 140 marks. Algorithms and programming (02). 2 hrs 30 minutes, worth 40%. 140 marks. Programming project (03) worth 20%. 70 marks.
Extending Learning at home	Students will be set regular homework and study materials using Microsoft Teams. It's strongly advised they also buy a copy of the textbook to support their learning.
Support Available	Students have six double lessons a fortnight. With small groups, students are able to address specific misconceptions or concerns with their teachers. Teachers are also more than happy to support students out of lesson time.
Useful web addresses and book resources/revision guides	PLC checklist with video links https://www.ocr.org.uk/qualifications/as-and-a-level/computer-science-h046-h446-from-2015/ https://student.craigndave.org/ https://www.amazon.co.uk/Revision-Notes-level-Computer-Science/dp/1471865835 OCR AS and A Level Computer Science Paperback – 12 Sept. 2016 Tackling A Level Projects in Computer Science OCR H446 Paperback – 18 Nov. 2019 A/AS Level Computer Science for OCR Student Book (A Level Comp 2 Computer Science OCR) Paperback – 5 Oct. 2017

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