

COMPUTER SCIENCE (OCR – H046 for AS and H446 for A2)

Subject Leader: Mr K WIN – BSc (Hons) Computer Science and PGCE (Exeter)

Computer technology is part of just about everything that touches our everyday lives; whether you are at work or at home, it is everywhere around you.

It is part of the English Baccalaureate (EBACC) and is regarded as an intensely creative and exciting subject that allows students to solve complex problems and equip them with the skills to create innovative software applications that are widely applicable in the real world.

By the end of the course, students will be able to analyse problems and apply the fundamental concepts of computer science including abstraction, decomposition, logic and algorithms.

What we offer in Sir William Borlase's Grammar School.

The school follows the specifications of OCR Board (starting from 2015). It has two main units.

Unit 1 is about theory on computing principles which is all about how everything works behind the scenes. This unit covers everything that they need to know about networking, database, data structure, system development, hardware and software, including legal and ethical issues.

Unit 2 focuses on algorithms and problem solving and includes programming using Visual Basic.Net, JavaScript and Python Programming Language. Students will be learning to analyse and break down problems in order to create solutions that the computer will be able to understand. They will discover how algorithms are helping you to solve complex problems. They are basically step-by-step instructions that lead to a final outcome which are all around us from baking a cake to stock market prediction.

In Year 13 (A2), students will take a 2 hours and 30 minute written exam for 40% (140 marks) of their A level for units 1 and 2. In addition, there will be a project which makes up 20% of their final A level grade. The project could be anything they wish to create using a programming language of their choice, for instance using GPS to track circuit lap times of racing cars, writing a phone app, creating the timetable booking system or developing a supermarket till checkout system.

Why should you study Computer Science?

1. It is part of everything we do in modern life.
2. It allows you to think and solve complex problems.
3. It offers many lucrative careers in a range of fields.
4. It helps you even if your primary career choice is something else.
5. It is an essential part of a well-rounded academic preparation.
6. There is a major skill shortage of 1.4 million computer scientists needed over the next 5 years. According to BBC news, the government will be investing billions to train and recruit qualified computer scientists to combat cybercrime which is a growing threat to the economy.
7. It enables you to make a positive difference in the world.
8. Future opportunities in computer science are without boundaries.

What happen next?

1. You can either go on to study further in university or pursue as a career in anything related to Science, Technology, Engineering and Maths (STEM).

2. You can work as a consultant, software engineer, network manager, data analyst, database administrator, programmer, game designer or web developer.
3. You can also go into many other fields such as Business, Retail, Banking, Art and Design, Transport, Telecom, Advertising, Research, Medicine, Education, Entertainment and Digital Media since computer applications are used pretty much everywhere.

“Everybody in this country should learn how to program a computer because it teaches you how to think.” (Steve Jobs)

Overview of the OCR specification

Content Overview	Assessment Overview	
<ul style="list-style-type: none"> • The characteristics of contemporary processors, input, output and storage devices • Software and software development • Exchanging data • Data types, data structures and algorithms • Legal, moral, cultural and ethical issues • Elements of computational thinking • Problem solving and programming • Algorithms to solve problems and standard algorithms <p><i>The learner will choose a computing problem to work through according to the guidance in the specification.</i></p> <ul style="list-style-type: none"> • Analysis of the problem • Design of the solution • Developing the solution • Evaluation 	Computer systems (01) 140 marks 2 hours and 30 minutes written paper (no calculators allowed)	40% of total A level
	Algorithms and programming (02*) 140 marks 2 hours and 30 minutes written paper (no calculators allowed)	40% of total A level
	Programming project 03* – Repository or 04* – Postal or 80 – Carry forward (2018 onwards)* 70 marks Non-exam assessment	20% of total A level

Entry Requirements

Minimum requirement grade 7 or above in Maths is essential.

If you have done GCSE computing or have any programming language experience will be desirable but is not essential.

Website Link

<http://www.ocr.org.uk/qualifications/as-a-level-gce-computer-science-h046-h446-from-2015/>

For more information or if you have any queries, please do not hesitate to contact me at

kwin@swbgs.com