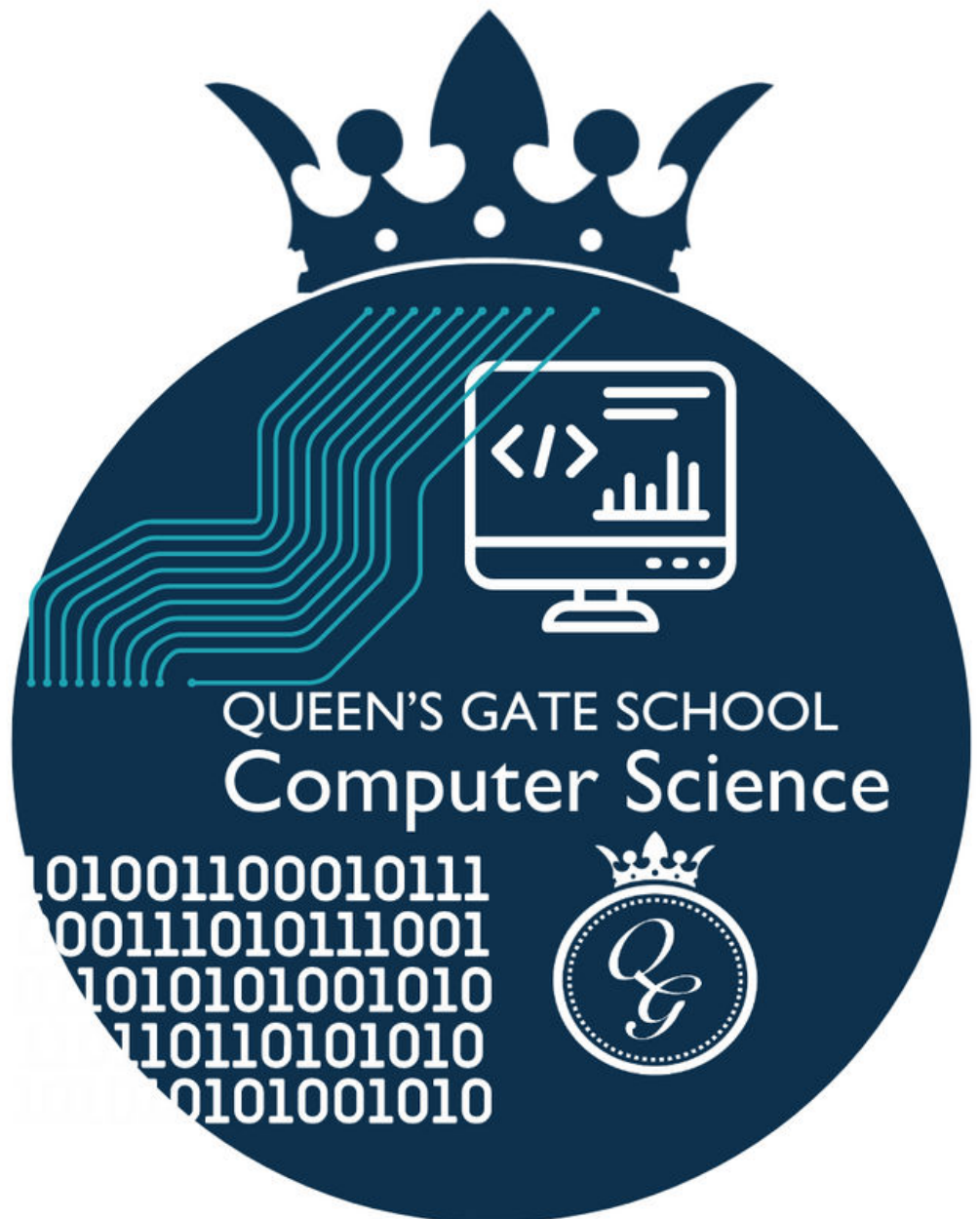


QUEEN'S GATE SCHOOL

COMPUTER SCIENCE

A-LEVEL GUIDE



WHY STUDY COMPUTER SCIENCE?

Computer Science encourages independent thinking and creativity in finding your own solution to a problem. During the course you will build up invaluable problem-solving skills. You will also gain a more logical approach to your thinking and learn to 'think outside the box' – a talent which will be invaluable in all your subjects. Computer Science is a practical subject during which you will be encouraged to learn by trial and error, which is a fun and engaging way to learn.

Software and applications are an essential part of everyday life. There is a wealth of fascinating and financially rewarding jobs in the IT industry, and IT knowledge is highly sought after. Women are still under-represented in this sector and there is currently a big drive to increase the percentage of women in the technology sector.

CAREERS IN COMPUTER SCIENCE

Computer Science is used in every industry and is often used to develop, drive and manage research efforts in science. There is a wealth of exciting opportunities, for example in computational medicine, chemical engineering, forensics, 3D animations and CGI as well as financial modelling.

Game Designer

A highly creative career, which involves developing games for smart phones, tablets, consoles or PCs. This includes systems, rules, and gameplay, and help with world-building to ensure the game is playable, fun, and engaging.



Cyber Security Specialist

Cyber Security Specialists are needed in all industries to protect organisations from unauthorised access, theft or damage to hardware, software and data.



Bank of England



Software Engineer

A highly creative career, which involves developing games for smart phones, tablets, consoles or PCs. This includes systems, rules, and gameplay, and help with world-building to ensure the game is playable, fun, and engaging.



Data Warehouse Architect

A highly creative career, which involves developing games for smart phones, tablets, consoles or PCs. This includes systems, rules, and gameplay, and help with world-building to ensure the game is playable, fun, and engaging.



SPECIFICATION: OCR

Component 1: Computer systems	Component 2: Algorithms and Programming	Component 3: Programming Project
Written examination: <i>2 hours 30 Minutes</i> 140 marks <i>40% of A Level</i> A combination of short answer and extended writing questions. Some questions require responses in a programming language, pseudocode, assembly language, SQL, HTML or JavaScript. Some questions will test the application of Boolean Algebra and binary arithmetic. <i>Calculators are not allowed.</i>	Written examination: <i>2 hours 30 Minutes</i> 140 marks <i>40% of A Level</i> A combination of short answer and extended writing questions. Most questions require responses in a programming language or pseudocode and trace tables. <i>Calculators are not allowed.</i>	Non-exam assessment: 70 marks <i>20% of A-level</i> Students will be expected to analyse a problem (10 marks), and design (15 marks), develop and test (25 marks), and evaluate and document (20 marks) a program. <i>The program must be written in a suitable programming language.</i>
TOPICS: • The internal workings of the (CPU) • Exchanging data including encryption and hashing • Web technologies • Software development • Data types • Boolean algebra and binary arithmetic • Legal and ethical issues	TOPICS: • Using computational thinking to solve problems. • computational thinking, problem solving and programming • Data structures • Standard searching and sorting algorithms • Recursion • Object Orientation	