COMPUTER SCIENCE

Curriculum Vision Statement

"There's so many exciting things going on in the computer industry, that if you have an idea, a dream, something that you want to do, then just go for it".

Stephanie Shirley

NORTHAMPTON SCHOOL FOR GIRLS

Vision

The Computer Science department at NSG aims to equip students with the skills to participate in a rapidly-changing world through challenging and engaging topics. Students will develop an understanding and application in the fundamental principles of computer science by having the opportunity to write programs, problem solve and produce professional digital products.

Computing skills are a major factor in enabling children to be confident, creative and independent learners and it is our vision that children have every opportunity available to allow them to achieve this.

Our Aims

The curriculum for Computer science aims to ensure that all students:

- Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.
- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.
- Are responsible, competent, confident and creative users of information and communication technology.

In Computer Science we are dedicated to ensuring our students leave with the skills to fully embrace a future of rapidly advancing computer technology.

Implementation

S3 Topics

YEAR 7	YEAR 8	YEAR 9
• Introduction to Network • Kodu game creation • Flowol control software • Netiquette • Spreadsheets • Scratch • Hardware & Processing • Little Man Computer	• Micro-bits • Web search skills • Binary Numbers and sorting data • Advanced Kodu game creation • Advanced Flowol • Databases • Python programming	• Advanced Python programming • Internet Safety • Nightclub promotion • Advanced Scratch • Image Processing • Web design • App Creation

KS4 Topics

GCSE COMPUTER SCIENCE	CAMBRIDGE NATIONALS IMEDIA
Algorithms, Boolean algebra, Data types & structures, Selection, Binary & Hexadecimal, Iteration, Binary representation, Problem solving, Programming languages, Searching & Sorting, Computer systems: Hardware, Computer systems: Software, Wired & wireless networks, System security, Ethical, legal, cultural and environmental issues	Unit R081 - Pre-production skills. Unit R082: Creating digital graphics Unit R085: Creating a Multipage Website Unit R087: Creating Interactive Multimedia Products

KS5 Topics - see A Level prospectus

Assessment

Assessment is carried out at regular intervals and aims to ensure that progress has been made from the start of the unit (for Key Stage 3) or at half-termly intervals (Key Stages 4 and 5).

Students complete online workbooks that contain information about the topic and space for them to record their work. These books have regular streamed activities to provide some differentiated challenges.

They will then complete an assessment at the end of each unit. A Progress Tracker document, shared via Google Classroom, is used by students to record, for each question, if they were correct or not in the assessment. They can then make use of this to improve their performance.

Key Stage 4 and 5 assessments are based on real exam questions from previous papers, tailored to fit the work already completed. Based on the outcomes, an equivalent GCSE grade is awarded, which leads to targeted intervention tasks to ensure students are receiving personalised teaching.

Assessment data is regularly monitored by the Head of Department and the curriculum is kept up to date to account for students' needs.

Independent Learning

As computers, in all formats, are used by us everyday we encourage our students to question how they work and how they can be used to support learning and aid in all tasks from creating websites to CAT scans and MRI scans used in medical imaging.

Home Learning tasks are set every 2 weeks for years 7 and 8. Year 9 and KS4 are set weekly Home Learning activities. Home Learning aims to reinforce and build on the knowledge and understanding that has been learnt in lessons, giving students the opportunity to explore key concepts further.