



COMPUTER SCIENCE

Entry Requirement: Students who have studied **Computer Science at GCSE** are expected to have achieved a grade 7 **and** a grade 7 in Mathematics. If you haven't studied GCSE Computer Science you must provide evidence of a keen interest and ability in computer programming **and** have achieved a grade 8 in GCSE Mathematics.

Examination Board: OCR H446

The study of Computing at this high level will enable students to learn about the science behind computers, how software is made and the principles of computer programming, in a range of programming languages, along with universal programming principles, to enable students to make their own programs. Students will learn the mathematical fundamentals that enable computers to work and develop understandings on how networks operate and are built.

The aims of these specifications are to encourage candidates to develop:

- an understanding of 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 for thinking creatively, innovatively, analytically, logically and critically
- the capacity to see relationships between different aspects of computer science
- mathematical skills
- the ability to articulate the individual (moral), social (ethical), legal and cultural opportunities and risks of digital technology.

Unit 1: Computer Systems- (40% - 2½ hours written paper)

- 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

Unit 2: Algorithms and programming- (40% - 2½ hours written paper)

- Elements of computational thinking
- Problem solving and programming
- Algorithms

Unit 3: Programming Project- (20% - Coursework)

- Analysis of the problem
- Design of the solution
- Developing the solution
- Evaluation

Teaching and Learning Methods

The students are encouraged to think for themselves and research as much as possible in and out of lessons. The following model is often used in teaching Computing: lessons are normally in ICT rooms with seminar-style starters, then research in the main body of the lesson, followed by examination-style reviews.

Homework

Students will be set a number of theory research tasks to do as homework, as well as examination style questions. All homework set will be relevant to lessons. Along with theory homework, students are expected to spend at least 2 hours a week on computer programming development skills.

What can you do at the end of the course?

You can go into the ICT, engineering, programming or business world with this A Level. You can also move onto a degree route in Computer Science, electronic engineering or aviation, where most universities and industries desire students to have studied Computing A Level. This A Level is suitable for any student who has a passion for modern technology and the world of computing and programming. Any further questions, please contact Mr Allen (j.allen@parmiters.herts.sch.uk).