ADVANCED GCE COMPUTER SCIENCE

EXAMINING BOARD: AQA

Minimum Entry Requirements: GCSE Grade 5 in Maths (a Grade 5 or higher in Computing would be beneficial)

KEY FEATURES OF THE COURSE:

Students will:
- Develop their problem-solving ability in a computing context using an algorithmic approach.
- Develop confidence in exploring a range of programming styles and technologies.
- Demonstrate their knowledge of programming through a problem solving scenario.
- Develop an understanding of the hardware and software aspects of Computing.
- Build a secure knowledge of how information is transported over networks.
- Be confident in how to express a range of different type of information in digital format.
- Develop their knowledge of computer architecture and organisation.
- Understand the fundamentals of Databases and what is meant by 'Big Data'

Why should I study Computer Science?
- The digital age needs computer scientists - Like it or not you're living in it – this is the Digital Age. Computer programmes have all but infiltrated every aspect of our lives. Computer scientists theorise, design, develop, and apply the software and hardware for the programmes we use day in day out – sounds pretty important to us.
- Computer scientists are needed in every type of industry- Every industry uses computers so naturally computer scientists can work in any. Problems in science, engineering, health care, and so many other areas can be solved by computers. It's up to the computer scientist to figure out how, and design the software to apply the solution.
- Opportunities for global careers - Clearly the World Wide Web shows the global impact of Computers and ICT. A career in computing could involve anything from installing a new network in Nottingham city centre, to developing a piece of software for a company anywhere from New York to Tokyo. Computing careers are truly global.

Not Studied Computing or Computer Studies at GCSE?
- No Problem – the structure of GCE Computing here at Long Eaton 16+ allows students who haven't studied the course before to gain entry with out being to disadvantaged. All students will start to program in Visual Basic in Year 12, so the learning curve should be the same for most students.

CONTENT COVERED

Your knowledge and understanding will be assessed in the following modules:

Paper 1: Problem Solving, Programming, Operating Systems, Databases and Networking

- On screen test: 2hr 30 mins duration
  - Fundamentals of programming
  - Fundamentals of data structures
  - Fundamentals of algorithms
  - Theory of computation
- 40% of overall A level qualification
- Students answer a series of short questions and write/adapt/extend programs in an Electronic Answer Document provided by AQA.
- Students will debug and develop a Skeleton Program in Python and document revisions.

Paper 2: Problem Solving, Programming, Operating Systems, Databases and Networking

- On screen test: 2hr 30 mins duration
  - Fundamentals of data representation
  - Fundamentals of computer systems
  - Fundamentals of computer organisation and architecture
  - Consequences of uses of computing
  - Fundamentals of communication and networking
  - Fundamentals of databases
  - Big Data
  - Fundamentals of functional programming
  - Systematic approach to problem solving
- 40% of overall A level qualification
- Students will answer compulsory short-answer and extended-answer questions.

Non Exam Assessment: The Practical Project

Students are required to investigate and develop a full system for a complex problem, by liaising with a real end user to investigate their requirements. The possibilities for this are endless and could be anything from a data-processing scenario for a small business, a scientific or mathematic problem, a simulation of a real life system or a computer based learning program. The NEA contributes to 20% of the overall qualification.