

# COMPUTER SCIENCE

Computer Science develops valuable programming and computational thinking skills, which are increasingly relevant to a wide variety of jobs. Employers want workers with an understanding of rigorous principles that can be applied to changing technologies.

There is opportunity for candidates to apply and consolidate their knowledge of computer programming by carrying out practical tasks that will develop their capacity for innovative thinking, creativity and independence. They will develop the skills of design and evaluation, and they will test and problem-solve when errors occur in both their own systems and those of others.

The WJEC GCSE in Computer Science encourages learners to:

- understand and apply the fundamental principles and concepts of computer science, including; abstraction, decomposition, logic, algorithms, and data representation
- analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs to do so
- think creatively, innovatively, analytically, logically and critically
- understand the components that make up digital systems, and how they communicate with one another and with other systems
- understand the impacts of digital technology to the individual and to wider society
- apply mathematical skills relevant to computer science.



## Unit 1: Understanding Computer Science

**Written examination: 1 hour 45 minutes (50% of the qualification)**

This unit investigates hardware, logical operations, communication, data representation and data types, operating systems, principles of programming, software engineering, program construction, security and data management and the impacts of digital technology on wider society.

## Unit 2: Computational Thinking and Programming

**On-screen examination: 2 hours (30% of the qualification)**

This unit investigates problem solving, algorithms and programming constructs, programming languages, data structures and data types and security and authentication.

## Unit 3: Software Development

**Non-exam assessment: 20 hours (20% of qualification)**

This unit requires learners to produce a programmed solution to a problem. They must analyse the problem, design a solution to the problem, develop a final programmed solution, test the solution and give suggestions for further development of the solution.

# INFORMATION & COMMUNICATION TECHNOLOGY

ICT is an important aspect of modern society. Employers and higher education institutions stress the importance of being computer literate. All careers require a certain degree of computer literacy. This GCSE course offers the pupils the opportunity to use many industry standard packages.

This course offers the opportunity for candidates to identify and solve real problems by designing information and communication systems in a wide range of contexts. ICT develops candidates' capacity for imaginative, innovative thinking, creativity and independence. The specification encourages the investigation and study of ICT in a variety of contexts. Candidates are given opportunities to acquire competence, capability and critical skills through the creation, implementation, use and evaluation of a range of information and communication systems. Multimedia is a topic that has a much greater influence in this specification. In addition to Microsoft Office, industry standard software such as Serif, Fireworks, Audacity and Moviemaker will be used to create multimedia solutions.

This specification in ICT enables learners to:

- become independent and discerning users of ICT, able to make informed decisions about its use and aware of its implications for individuals, organisations and society
- acquire and apply creative and technical skills, knowledge and understanding of ICT in a range of contexts
- develop ICT-based solutions to solve problems
- develop their understanding of current and emerging technologies and their social and commercial impact
- develop their understanding of the legal, social, economic, ethical and environmental issues raised by ICT



# INFORMATION & COMMUNICATION TECHNOLOGY



## SUMMARY OF ASSESSMENT

Unit 1: Understanding ICT External Assessment: 1½ hours	Full Course 20%; Short Course 40%
This examination paper will assess the requirements of the Key Stage 4 Programme of Study for ICT and the functional elements of ICT in a home and school context.	
Unit 2: Solving Problems with ICT Controlled Assessment: 22½ hours	Full Course 30%; Short Course 60%
This controlled assessment consists of a portfolio of work which shows candidates' attainment in obtaining and interpreting different types of information; using, developing and communicating information to meet the purpose of their studies and presenting the results of their work.	
Unit 3: ICT in Organisations External Assessment: 1½ hours	Full Course 20%
This examination paper will assess the 'application' content of ICT in a business and industry context.	
Unit 4: Developing Multimedia ICT Solutions Controlled Assessment: 22½ hours	Full Course 30%
This controlled assessment will give candidates the opportunity to develop a piece of work using multimedia software following a single task brief issued by WJEC.	