

# NATIONAL 4/5 COMPUTING SCIENCE

## Why Choose Computing Science?

Computers are everywhere and vital to everyday life! They shape the world in which we live in industries such as science, communications, entertainment, education, business and home life. You will build on your experiences in S1/2 and explore further a variety of computing aspects including multimedia, software design and protecting technology through security. This will be done through practical and group tasks.

This is a challenging course, designed to help you:

- apply computational-thinking skills across a range of contemporary contexts
- apply knowledge and understanding of key concepts and processes in computing science
- apply skills and knowledge in analysis, design, implementation, testing and evaluation to a range of digital solutions
- communicate computing concepts and explain computational behaviour clearly and concisely using appropriate terminology
- develop an understanding of the role and impact of computing science in changing and influencing our environment and society

This course will be suitable for all learners who are interested in a career in

- Software Engineering
- IT Security
- IT Project Management
- Web Development
- Applications Development

## What does the course involve?

The course is split into 4 topics

- Computer Systems
- Software Design and Development
- Database Design and Development
- Web Design and Development

### *Computer Systems Content*

You will develop an understanding of how data and instructions are stored in binary form and basic computer architecture. This will help you gain an awareness of the environmental impact of the energy use of computing systems and security precautions that can be taken to protect computer systems.

The Computer Systems area of study has 4 areas of study:

- Data Representation
- Computer Structure
- Environmental Impact
- Security Precautions

### *Software Design and Development Content*

You will develop knowledge, understanding and practical problem-solving skills in software design and development, through a range of practical and investigative tasks using appropriate software development environments.

This develops your programming and computational-thinking skills by implementing practical solutions and explaining how these programs work. Tasks involve some complex features (in both familiar and new contexts), that require some interpretation by you. You are expected to analyse problems, and design, implement, test and evaluate their solutions.

### *Database Design and Development Content*

You will develop knowledge, understanding and practical problem-solving skills in database design and development, through a range of practical and investigative tasks.

This allows you to apply computational-thinking skills to analyse, design, implement, test, and evaluate practical solutions, using a range of development tools such as SQL. Tasks involve some complex features (in both familiar and new contexts), that require some interpretation by you.

### *Web Design and Development Content*

You will develop knowledge, understanding and practical problem-solving skills in web design and development, through a range of practical and investigative tasks.

This allows you to apply computational-thinking skills to analyse, design, implement, test and evaluate practical solutions to web-based problems, using a range of development tools such as HTML, CSS and Javascript. Tasks involve some complex features (in both familiar and new contexts), that require some interpretation by you.

## **How is the course assessed?**

Throughout this course, you will be asked to add pieces of work to your N4 Portfolio - this will be used if we need to change your level later in the year.

Throughout the year, you will do Progress Checks, using exam style questions, at the end of each term, to make sure you are progressing at a suitable level.

Later in the year, you will be required to undertake a coursework as well as the final exam in May. The formal assessment comprises 2 parts, totalling 160 marks:

- Assignment – worth 50 marks, this will be done over 8 hours of in class time, then sent to the SQA for marking. This is used to demonstrate your practical skills in Software, Database and Web Design and Development. The SQA issue the Assignment each year and it is done in late February/ early March. The Assignment is open book, meaning that you can refer to any resources or work done in class.
- Question Paper – worth 110 marks, this will be done as a 2-hour closed book exam

## **Homework**

This will be given weekly to reinforce your learning and to assess your progress.

## **Possible pathways**

- National 5 Computing Science
- Higher Computing Science
- NPA Level 5 Web Design
- NPA Level 6 Digital Passport