Computing Science – National 4 and 5

The course is designed to develop learner's ability to use computers to solve modern day problems. Learners will learn how to analyse these problems and design and create solutions using a range of applications. There will be numerous opportunities for learners to become more confident in their analytical and computational skills.

Aims of the Course

- to develop an understanding of the impact of computing science in changing and influencing our environment and society
- to develop learners ability to write programmes in the context of games, phone apps and web development
- to enhance learner's ability to communicate computing concepts clearly and concisely using appropriate terminology
- to enhance digital literacy skills in a number of software environments

Course Content

The course consists of two mandatory Units:

- **Software Design and Development –** In this unit, learners will develop short programs using a software development environment and will use understanding of basic concepts in software development environments to explain how programs work. They will also produce a short factual report on an emerging and innovative software development technology.
- **Information System Design and Development –** In this unit, learners will develop simple information systems, using appropriate development tools and consider a number of basic factors when designing and implementing an information system. They will also produce a short factual report on an emerging and innovative information system technology.

Skills

Learners will be required to demonstrate a high level of overall performance by:

- applying aspects of computational thinking across a range of contexts
- analysing problems within computing science across a range of contemporary contexts
- designing, implementing and testing digital solutions (including computer programs) to problems across a range of contemporary contexts
- developing skills in computer programming and the ability to communicate how a program works by being able to read and interpret code
- communicating understanding of key concepts related to software design and development and information system design and development, clearly and concisely, using appropriate terminology

- understanding of the legal implications and environmental impact of contemporary information system technologies
- applying computing science concepts and techniques to create solutions across a range of contexts

Methodology

- A wide range of learning and teaching approaches are used in the department. These include whole class teaching, group discussion activities, paired work and individual work. The course is designed to allow many opportunities for collaboration and active learning. Pupils will spend a large proportion of time using a range of software applications.

Assessment

- **National 4 – Added Value Unit: Computing Science Assignment**
  This Unit requires the learner to apply skills and knowledge from the other Units to analyse and solve an appropriate challenging computing science problem. To achieve the National 4 Computing Science Course, pupils must pass all of the required Units including the Added Value Unit. National 4 Courses are not graded.
- **National 5 –** This course will be assessed trough a combination of an assignment and a question paper. The purpose of the assignment is to assess practical application of knowledge and skills from the Units to develop a solution to an appropriately challenging computing science problem. It will assess pupils' skills in analysing a problem, designing a solution to the problem, implementing a solution to the problem, and testing and reporting on that solution. The question paper will have 60% of the total mark and the assignment will have 40% of the total mark.

Homework

Pupils will be expected to complete regular homework exercises which will reinforce class learning. Pupils will also be encouraged to practise the skills that they have developed.

How Can You Help?

Doing the following will help your child to become more skilled in Computing Science:

- Download and install Scratch and AppInventor (freely available) onto your home computer.
- Encourage your child to practise the skills learned in class.
- Encourage your child to develop problem solving skills using internet research to find appropriate information.
- Encourage your child to learn about new computing science developments.