



Computer Programming NCEA Levels 1 to 3

Course Description:

This course will start with the basics of Python programming at Level 1: printing things to the screen, typing things into the program, storing things separately or in lists, repeating parts of the program and making decisions. At Level 2, we build on those basic skills and look at better program design structures and create a Graphical User Interface (GUI) to control the program more easily. At Level 3 we look at Object Oriented Programming techniques. We'll use Python as our programming platform because it is free to download and use. Python is quite similar to everyday English so is quite easy to learn.

This course is aimed at year 11 students with little or no programming experience but an interest in the field. Older students can develop their programming skills but need to be aware of the limited number of credits at higher levels.

The projects completed through the year will cover the requirements for 3 internal Achievement Standards. The course offers 17 credits: 5 at Level 1, 6 at Level 2 and 6 at Level 3

Content

Topics covered include at Level 1:

- Basic programming concepts: Input/Output, Variables, Loops, and Decision making
- Problem solving and planning how to tackle problems
- Data types and getting the computer to do maths efficiently
- Lists
- Testing that the program works as expected and coping with unexpected input

Topics covered include at Level 2:

- Defining methods
- Extending programming skills with more functions and Graphical User Interfaces (GUI)

Topics covered include at Level 3:

- Object Oriented Programming concepts: objects, instances and inheritance

Prior Learning Required

- Students with an interest in logical thinking, mathematics and problem solving will find this course appealing. No formal computer programming experience required, though any will be useful.

Learning Resources & Associated Costs:

- For the video conference sessions: a computer with camera, microphone, speakers or headphones. If working in a shared space a headset microphone is recommended.
- Access to a computer with Python 3 installed. Student's own laptop is recommended so they can continue to play at home.
- Python is free to download from www.python.org/downloads/

Assessment:

Std No.	Version	Standard Title	Completion	Type	Credits
AS 92004	2	Digital Technologies 1.1 Develop a computer program	Early Term 2	I	5
AS 91896	2	Digital Technology 2.7 Use advanced programming techniques to develop a computer program	Early Term 3	I	6
AS 91906	2	Digital Technology 3.7 Develop a complex computer program for a specified task	Term 4	I	6

I = Internally Assessed | E = Externally Assessed