Introduction

There's no escaping it - computing is becoming an essential part of the scientist toolkit. From coping with the data deluge by automated analysis or simulating a mathematical model of your system, coding is an essential skill for the modern biologist.

This hands-on, one-day course will introduce you to Python, a popular and powerful computer language. You will learn the basics of working with Python through the increasingly popular Jupyter Notebook system.

But Don't Panic - this course is designed for those with no existing coding experience.

Who is this course for?

PhD students and researchers at any career stage in biology and related areas of science and medicine.

Although no previous coding experience is required, attendees will be working on their own laptops and will be expected to install some programmes before the course. Any laptop or operating system is suitable.

What does this course cover?

The Basics of Programming with Python and Jupyter Notebooks

In the first half of the course we'll take you from zero to hero. Introducing Python and Jupyter Notebooks from the very basics through to writing simple functions. This will involve short tutorial alternated with practical and relevant exercises - all done through live coding.

In this part of the course we will cover variables, data types lists, loops and conditionals. Don't worry it will all become clear because we'll also cover built-in and on-line help.

Plotting and Statistics in Python

In the afternoon, you'll learn some practical application of Python. By introducing important modules (NumPy, SciPy, Pandas and Seaborn) we will cover how to read in datasets and carry out simple plotting and statistics on this data.

Finally, we'll talk about how to use other people's code, write your own code and make them readable for other programmers (and your future self!).

A Note of Prerequisites

Attendees should be comfortable installing applications on their own laptops, details of which will be provided closer to the time. Any laptop or operating system is suitable.

Attendees will also be asked to read some background materials before attending the course to ensure that all attendees have common knowledge. This will be a small amount and will be explained with pointers to additional resources.

Who is the course trainer?

Chas Nelson is a Research Fellow at the University of Glasgow working in quantitative microscopy. He has taught computer science topics to a wide variety of groups and comes prepared with an undergraduate degree in Biology (and Physics) and a PhD in Computer Science, specifically bioimage analysis. Chas uses Python and Jupyter Notebooks daily and has an interest in building courses that enable students to go on and continue learning after the course.

Chas will be supported by Mikolaj Kundergorski, a PhD student at the University of Glasgow using mathematics and computer vision to understand salmon behaviour. Mikolaj has experience in teaching programming at University level and as an IT consultant for the World Health Organisation.

Between them, Chas and Mikolaj will be able to fully support your learning throughout the day and provide you with the tools to continue developing your skills after the course.