Open-Source Computing

As a part of this course we will start to introduce you to scientific computing. There are many choices of programming languages and computing platforms that you could use for scientific computing. We have chosen to concentrate on the **Python** language for programming and we will introduce you to using **Jupyter** notebooks, which provide a convenient way to write text, equations, and code all in the same document.

Often the most difficult part of getting started in coding is installing everything that you need. Fortunately, for Python there is a quick and easy way to get started using Google's Colab:

https://colab.research.google.com/

You can download, run, and change all of the notebooks on our course's computing tab in Colab. This will allow you to get started coding right away. Colab runs on the web and inevitably you will soon want to run Python on your own laptop. The instructions below will help you to do that.

Installing Anaconda

A broadly useful approach in programming is to break a problem into small pieces, solve each piece, and then reassemble the pieces into a full solution. This approach has been used to construct a set of tools for programming in Python. The **Anaconda** package pulls these pieces together and allows you to install them as a unit. This sheet assists you in installing Anaconda. In the next tutorial you will get started using Python and, in particular, Jupyter notebooks.

This installation will take about 15 minutes, depending on your computer.

To install Anaconda:

1. Go to, or click on https://www.anaconda.com/download/
2. Select the icon for your operating system: Windows ( ), macOS ( ), or Linux ( ).
3. If you are unfamiliar with installing software on your operating system, you can get further information about the installation by clicking on the "How to Install ANACONDA" link that appears below the two download options. Otherwise, just follow your typical install procedure.
4. You will want the most recent Python Version (Python 3.9 as of this writing). If you have an older computer, you might need to install an older version of Python.
5. Part way through the installation you will be asked whether you want to install Visual Studio Code. This is not necessary yet, but will be useful later and you may as well install it now.

Once you have completed the installation you can check that it worked by going to your applications and opening the Anaconda-Navigator application. If this opens a window that allows you to choose between jupyterlab, jupyter notebook, qtconsole, etc., then your installation succeeded.