

# Introduction to UNIX & HPC

## Course Outline

**Anne Cregan | 21 January 2013 | 3.1**

### Why use High Performance Computing?

High Performance Computing is a very powerful tool to use when facing computationally intensive tasks. If you are waiting hours or days for your computer to crunch through your data, this course is for you! It will enable you to use the HPC facilities available to the university through its support agencies such as Intersect and NCI. If you're using one or more of a very broad range of applications currently supported, this should allow you to use the application you are familiar with to process your data much more quickly.

### Who is this course for?

This is a two day general introductory course for researchers and PhD students who have never used high performance computing before or have had only limited exposure. It assumes only basic Windows competence and will teach participants how to interact via the command line, move data between different locations and prepare and run it through the HPC facilities. It will be delivered in a small group workshop including presentations and hands-on exercises with tutors.

### What will be covered?

Participants will learn:

#### **Shell competence**

- how to connect to the Intersect HPC facility by connecting/establishing a session in a command line environment using a Linux shell
- the basics of using Putty and Secure Shell (SSH) to log in to the HPC machine

- the basics of how a shell works (commands, arguments)
- how to navigate and create a directory hierarchy using Bourne Again Shell (BASH) commands
- how to inspect and summarise the contents of files using BASH commands
- how to save the output of commands, and how to link commands together

### **Data Handling for HPC usage**

- how to transfer data to and from the HPC machine.
- how to perform in-situ editing of files on the HPC machine
- how to change permissions on files and folders on the HPC machine for individual users and groups
- how to install and configure an FTP program
- how to navigate around local and remote folders.
- how to transfer files between local and remote folders.
- different file types: text, binary, DOS, Unix.
- using Putty Secure Copy (PSCP) for bulk transfers on the command line.
- how to get a dataset off the web and onto the server.

### **Using the HPC to run jobs**

- manage jobs on the HPC machine using Portable Batch System (PBS)
- understand the disk partitions, properties and when to use them
- write job scripts
- submit and delete jobs
- understand some PBS environment variables
- understand machine limits