

Introduction to Computing for Part III / MAST and Graduate Students at the IoA

http://www-xray.ast.cam.ac.uk/~rmj/lectures/intro_computing

Session 1

- Course Overview
- Local Configuration of computers
 - Logging in
 - System reboots
 - Changing your password
 - Using other shared systems
 - Email
 - Various clients
 - Forwarding your email elsewhere

Session 1

- Disk Space
 - /home, /data, system backups
- Backups – making your own
- Web browsers
- Printing
- Office Packages
- Running science analysis software
- Environment Modules

Session 1

- Finding information, papers and data
 - Astronomy resources
 - Computing resources
 - Using the NASA Astrophysics Data System
 - Organizing papers
- Browsing the Sky
 - Introduction to FITS files
 - Understanding FITS files

Session 2 + 3

- Introduction to Linux
 - Unix filesystem
 - Keyboard shortcuts
 - Wildcards
 - Basic file permissions
 - File redirection and pipes
 - Job control
 - Shell variables, environment variables, aliases
 - Escaping and quoting
 - Select copy and paste
 - Command Substitution

Session 3

- Scripting and programming Languages
 - Shell scripts, scripts and programs
 - Fully featured scripting languages
 - Programming Languages
 - Numerical programming
 - Compilers and programming tips
 - Building a simple program
 - Gnu tool chain / installing software packages
 - Installing Python modules

Session 4

- Shell scripting
 - Scope of shell scripts
 - Bash and tcsh
 - Arguments and variables
 - Conditional tests
 - Looping
 - Command substitution
 - Exit status
 - Different ways to run a script
 - Here documents

Session 4

- Graphics and plotting
 - Presenting your data well
 - Plot file formats
 - Embedding postscript files
 - Converting between graphics formats
 - Software suggestions
 - Example plots
 - Manipulating plot files with Unix tools
 - awk
 - sort
 - sed
 - grep

Session 5

- Introduction to LaTeX
 - Why LaTeX?
 - Emacs as LaTeX sensitive editor
 - Simple example of using LaTeX
 - Dealing with errors in your LaTeX file
 - LaTeX document structure
 - Typesetting text, labels and cross-references, math mode, tables, including graphics files
 - Including published figures in your document
 - Citations and bibliography - BibTeX