

IT WORKSHOP

Week1

Basic Unix commands

Week2

sed, grep, sort, ssh,awk,shutdown,ftp,service,chown,chmod

Week3

Latex:Introduction, Document Structure,Essentials ,Troubleshooting Creating a Title, Sections ,Labelling,Table of Contents.

Typesetting Text: Font Effects, Coloured Text ,Font Sizes ,Lists ,Comments & Spacing,Special Characters.

Week4

Tables, Figures

Equations: Inserting EquationsMathematical Symbols,Practical

Inserting References: Introduction,The BibTeX file ,Inserting the bibliography,Citing references,Styles,Practical

Week5

Introduction to PHP

Declaring Variables,Data types, Arrays, Strings,Operators,Expressions,Control Structures, Functions, Reading data from Web forms,

Week6

Handling file uploads,Connecting to database (MySQL), Executing Sample Queries, Handling Results, Handling Sessions and Cookies

Week7

The NumPy array object

What are NumPy and NumPy arrays, Creating arrays, Basic data types, Basic visualization, Indexing and slicing, Copies and views, Fancy indexing

Numerical operations on arrays

Elementwise operations, Basic reductions, Broadcasting, Array shape manipulation, Sorting data

Week8

Matplotlib: plotting

Introduction, Simple plot, Figures, Subplots, Axes and Ticks, different types of Plots: examples and exercises

Week9

Image manipulation and processing using Numpy and Scipy

Opening and writing to image files, Displaying images, **Basic manipulations**- Statistical information, Geometrical transformations, **Image filtering** – Blurring/smoothing, Sharpening, Denoising, Mathematical morphology, **Feature extraction**- Edge detection, Segmentation

Week10

High-level scientific computing

File input/output, Special functions, Linear algebra operations, Interpolation: scipy.interpolate, Optimization and fit, Statistics and random numbers

Week 11

High-level scientific computing

Numerical integration, Fast Fourier transforms, Signal processing, Image manipulation

Week12

Statistics in Python

Data representation and interaction, Hypothesis testing: comparing two groups, Linear models, multiple factors, and analysis of variance, More visualization: seaborn for statistical exploration