

14BD99

Professor: Nandan Rao

Introductory and intermediate computing for Data Science

Overview and Objectives

We will start each day with a short programming exercise that will be presented and discussed. This will be followed by lectures that will introduce a new topic, and there will be assignments each day to apply the theory we discussed in class.

This is an essential time for you to get comfortable with programming before the theoretical onslaught of your first-term courses begins. I highly recommend you familiarize yourself as much as possible with R and Python before the course. This will allow me to give you more personalized guidance during the brushup.

Course Outline

Get to Know Your Computer

- * Introduction to Unix
- * Introduction to shell
- * Installing packages, compiling executables, the path.
- * Reproducible environments

Python

- * Python basics: IDE's, editors, Jupyter
- * Packages and folder structures
- * Basic Syntax
- * Easier to Ask for Forgiveness than Permission
- * Object Oriented Programming in Python

R

- * R basics: IDE's, editors, scripts, and interactive sessions.
- * Packages
- * Understanding and using Functions
- * Working with empirical data: Tidyverse
- * Functional Programming in R

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Programming Efficiently

- * DRY
- * Loose coupling and the principle of least knowledge
- * Testability
- * Object Oriented vs Functional Programming
- * Working with a Team
- * Git

Required Activities

TBD

Evaluation

You need a pass grade in an exam that will be given to you at the end each brush up course.

If you fail this exam you need to retake it within 5 days from the first one. We encourage you to hire a tutor to prepare you best for this retake. We can make suggestions for a tutor but we will not cover the cost of tutoring. In order to be able to follow satisfactorily the rest of the program a pass mark in these exams is a must and we need to make sure that you have reached the necessary level before the program starts. The point of the courses and the exams is to make sure we have helped you to reach the necessary level before the real program starts.

Materials

Suggested materials and assignments provided through the online DataCamp classroom. You will be provided free access to all the premium content on DataCamp.