Course outline: Scientific Computing for Psychology

In this course you will gain introductory experience to scientific computing while learning the basics of programming in Python. We will cover topics including basic programming skills, data manipulation and analysis, and data visualization. You will learn these tasks with reference to everyday problems psychologists face.

Required reading:  
There is no textbook for this course. Students will be assigned reading and practice exercises on free online websites.

Assessments:

There are no tests in this course. Each student will complete program exercises each week. Students will be assessed on the method and functionality of these programs. Students will also be assessed on a final project where they will design and report results from a mock experiment using Python.

Course Outline

1. Introduction to Python
   1. Jupyter Notebooks
   2. Data Types
   3. Loops
   4. Functions
2. Psychopy
   1. Using the Builder to make an experiment
   2. Editing experiment with Coder
3. Processing data files
   1. Introduction to Pandas
   2. Data wrangling in Python
4. Data analysis
   1. Roll your own
   2. SciPy
   3. StatsModels
5. Data Visualization
   1. MatPlotLib
   2. Seaborn