Syllabus: Python for Big Data

Course Description: A class that introduces students to problem solving using Python with an emphasis on Data Presentation and Data Wrangling.

Course Modality:
This is a multiple institution class to be given at several different sites with different time schedules. However, course material is developed in a central manner with input from all host institutions.

The class is given in an inverted-classroom manner. Students will peruse study materials *before* each class, be tested on it, and then interact with the presented material using activities. These activities are supervised by one or more instructors. Activities are done in groups (usually of two) and involve programming.   In addition, students will receive weekly programming projects and three or four programming assignments. The former are individual, the latter in groups of three to four students. Emphasis is on learning how to *do* things, not on repeating how things work.

Course Evaluation: Each student will receive an individual grade. The grade is composed of the following components:
- 10% Individual quizzes (with each class)
- 10% Group quizzes (with each class)
- 10% Homework (individual, weekly)
- 30% Project (groups)
- 20% Midterms (individual, with computer)
- 20% Final (individual, with computer)

The individual administration of grades follows the rule of the host-institution.

Course Materials: Will be published at the course website off http://tschwarz.mscs.mu.edu. Some material will be password protected for instructor use only.

Course Text-book: There is no textbook, though students are recommended to avail themselves of free resources on the internet as well as consulting a Python book. Towards the end, buying the Python Cookbook is recommended.

Course Content (under development):
Preparations
      Module 1: Installing and using Python with Idle
Basic Python
      Module 2: Statements, variables, types
      Module 3: Conditional Execution
      Module 4: For-loops
      Module 5: While-loops
      Module 6: More on conditional expressions
      Module 7: Defining functions
      Module 8: Returning values from functions
Python Data Structures: Lists, Dictionaries, Strings

File Processing with Python

Python Data Structures 2: Tuples, sets, etc.