Introduction to Scientific Computing

UNIX
1. Introduction to computing and the vi file editor
2. Files and data
3. UNIX shell
4. The operating system and your first program
5. Data stream, *meta*-characters and the shell environment
6. The shell environment in detail
7. Security and backing up
8. Data stream manipulation
9. Text manipulation
10. Advanced text processing with awk
11. Counting and the "for" loop
12. Conditionals and the "if" statement
13. Extracting and formatting data

PYTHON
1. Introduction to Python
2. Data types: numbers and strings
3. Data types: lists and tuples
4. Functions and Modules
5. Flow control and conditionals
7. Dictionaries
8. Reading and writing of files
9. Error analysis

MATHEMATICA and MATLAB
1. MATLAB - Calculator, variables, datatypes
2. Plotting, scripts
3. Functions, input and output
4. Basic statistics of a dataset
5. Model fitting and regression analysis
6. Exam – Mathematica & Matlab
7. Special Topics

Course Policy:
You may utilize the internet for help in this course. In fact it is encouraged. But you may not copy and paste from the sources on the internet. Similarly, if you are working together with another student, you may not copy each other's code. Working together is also highly encouraged. Much can be learned through hashing out code with another programmer. However be aware that you are required to formulate and write your own code. Any similar approaches of coding a solution to a problem must include a comment line listing those who worked together. When in doubt, list those who worked with you. All parties involved must insert the comment line. **A grade of zero for the entire assignment will be applied for not following these guidelines**. Any "exact duplicate" lines of code will result in a zero for the entire assignment. All parties involved will receive the zero. In other words, do not share code but do discuss it. Writing pseudo code is the best way to go about solving homework together. In addition, using more than one line of code obtained from any source must have the source referenced.

JHU policy - Code of Conduct

The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition.
In addition, the specific ethics guidelines for this course are listed above. Report any violations you witness to the instructor. You may consult the associate dean of student affairs and/or the chairman of the Ethics Board beforehand. See the guide on "Academic Ethics for Undergraduates" and the Ethics Board Web site (http://ethics.jhu.edu) for more information.