PHYS 2001: Introduction to Scientific Programming, Data Analysis, and Visualization for Physicists

Instructor: W. M. Dennis, Room 204D

Reading List:


Office Hours: Will arrange

Projects/Homework sets are due at 4:00 on the due days specified. Projects 1 day late will be penalized by 15%, 2 days late by 30%, and 3 or more days late will not be accepted. Your lowest project score will be dropped from your course average. No other allowances will be made for late or missed projects. Your project average constitutes 100% of your course grade. Study groups are strongly encouraged, but you must hand in your own work. Plagiarism is forbidden by the Academic Honesty Policy of UGA and will be dealt with accordingly. Projects must be completed using Python.

Grade: PHYS 2001 Grade = Average Project Grade (as described above).

Incompletes: Rules concerning withdrawals and incompletes We will follow the rules of the UGA Bulletin concerning withdrawals and incompletes.

Grading Scheme: Use of the plus/minus system is a requirement – it is the only grading system approved for the University of Georgia.

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\begin{align*}
A & \equiv [85, 100] & A- & \equiv [82.5, 85] \\
B+ & \equiv [80, 82.5] & B & \equiv [70, 80] & B- & \equiv [67.5, 70] \\
C+ & \equiv [65, 67.5] & C & \equiv [55, 65] & C- & \equiv [52.5, 55] \\
D & \equiv [40, 52.5] & F & \equiv [0, 40]
\end{align*}
\]

Academic Honesty: All academic work must meet the standards contained in "A Culture of Honesty." Students are responsible for informing themselves about those standards before performing any academic work. More detailed information about academic honesty can be found at the website given above. As a UGA student, you are responsible for knowing and understanding this policy. If you have any questions about the propriety of actions relating to this course, you are obligated to ask me for clarification. See also the UGA website: [http://www.uga.edu/honesty/](http://www.uga.edu/honesty/).
Selected Topics In:
1. The Unix Command Line - Interpreted versus Compiled Languages - Computing with Formulas
2. Functions
3. Loops and Lists
4. Branching
5. Files, Strings and Dictionaries
6. Random Numbers
7. Data Input, Output and Processing
8. Array Computing, Curve Plotting and Visualization
9. Brief Introduction to Object Oriented Programming

Projects
1. Install python distribution on personal computers – Due: Thursday, August 20
2. Calculate \( \int_{-10}^{10} e^{-x^2} \, dx \) using (a) a Riemann sum and (b) Simpson’s rule – Due: Tuesday August 25
3. To be announced – Due: Thursday, August 27
4. To be announced – Due: Tuesday, September 1
5. To be announced – Due: Thursday, September 3
6. To be announced – Due: Tuesday, September 8
7. Capstone Project: To be announced – Due: Thursday, September 17