

ASTR 401: Computer Simulation in Astronomy

Classes

Place: EXPL 1004 (section 001) or online (section 002)

Time: TR 12:00–1:15 (section 001)

In-person classes will be recorded and posted on the course website for both sections.

Website: www.physics.gmu.edu/~joe/ASTR401.html

Instructor

Joe Weingartner (he/him)

Planetary Hall, room 231

703-993-4596

jweinga1@gmu.edu

Office hours: MW 11:00-12:00 (zoom)

Course Objectives

Develop the skills and knowledge needed to participate in research projects in computational astronomy.

Implement the following principles in your computational work:

1. Modular programming
2. Rigorous testing; construct the smallest bits of code possible and test them thoroughly before moving on
3. Clear and commented code
4. Testing for convergence
5. Start with an easier problem and build up to the problem you want to solve.
6. When you use a pre-existing routine, make sure you understand how it works well enough to spot if it produces unreasonable output, indicating that it either has a bug or you're not using it correctly.
7. Use computation to gain physical insight.

Evaluation

Coding assignments, to be worked both in class and at home (100%)

1. You are encouraged to discuss the assignments with one another, but the scripts that you submit must be your own, independent work. You may not share any electronic files, including scripts and data files, with one another.
2. Do not hesitate to seek help from me, in person or by email.
3. The point value of each problem is indicated in brackets. The total number of points for the semester is 710.
4. See the course web site for due dates. Late work will only be accepted in extenuating circumstances (medical or family emergency). If you don't finish the assignment, turn in what you have.

Letter grades for the course will be determined from total numerical grades as follows:

A range: 90-100%

B range: 80-90%

C range: 70-80%

D: 60-70%

F: < 60%

Civility and Inclusion

The Department of Physics and Astronomy is committed to civility and inclusion. All members, including instructors and students, are expected to abide by the department's Code of Professional Conduct.

Department/University Resources

Spectrum peer-mentoring program for physics and astronomy students

Incident Report Form

Academic Integrity

Disability Services

Learning Services

Student Support and Advocacy Center

Counseling and Psychological Services