

AST 390: Computational Astrophysics (Special Topics) / Spring 2025 (rev. 1.00; 2025-01-21)

Instructor: Prof. Michael Zingale, ESS 452, michael.zingale@stonybrook.edu

Class Meeting Time/Place: Tues. and Thurs., 11:00 am to 12:20 pm, location: Humanities 3018

Learning Outcomes

Students will learn how to solve problems in astrophysics using basic numerical methods. Students will learn the basics of python and how it is used in astronomy.

Credits

This is a 3-credit course.

Prerequisite

AST 203, PHY 277, MAT 203 or 211 or 307 or AMS 261. It is very important that you have the necessary prerequisites—we will assume that you are comfortable with a programming language.

Course Website / Materials

Course materials are available online at: https://zingale.github.io/computational_astrophysics

There are no required or recommended textbooks.

Office Hours

TBD

It is not possible to pick office hours that can accommodate the schedule of all students in this class. You are encouraged to contact the instructor to make an appointment outside of these times.

Homework

Homework is an essential part of this class. There will be 7–8 homework assignments throughout the course. Students will typically have 1–2 weeks to complete an assignment.

While it is recognized that students sometimes work together and discuss the homeworks as part of the learning process, *what you turn in must be your own work. Copying will not be tolerated.* If you wrote code as part of your solution, then you need to also include a machine-readable copy of your source code.

Generative AI / LLM Policy: Students are not allowed to use generative AI / large language models (e.g. ChatGPT) to do their homework. If it appears that work turned in has been generated via AI, you may be asked to explain in words how your program works and your design decisions.

Homeworks are due at the time/date listed on the assignment.

Late homework policy: there is a *4 day grace period* from the homework due date—you may upload your solutions at any time in time in this window without penalty. After this grace period, the solutions will be posted and no further late assignments will be collected.

Homework grades will be posted to the course management system gradebook approximately 1 week after the due date. Students should report any errors/missing grades promptly.

Exams

There are no exams in this class.

Final Project

All students will complete a final project, demonstrating what they have learned in the class. Details and suggestions for projects will be given in class mid-semester.

In addition to a write-up, you will be asked to submit your project idea approximately 5 weeks before the end of the semester and to give a 1-slide overview of what you found during the last class period.

Course Grade

The final grade will be based on the homeworks and project using the following weighting:

- homework: 70%
- project: 30%

Computed this way, the overall course grade will range from 0–100. Letter grades will be based on a standard grade scale (i.e. an overall score > 90/100 would be an A- or better). However, if necessary, a curve will be applied to the overall course grade, considering the overall performance of the class. Students who wish to discuss their grades or class performance should see the instructor in person. *For privacy reasons, grades will not be discussed via e-mail.*

Student Accessibility Support Center Statement

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Student Accessibility Support Center. For procedures and information go to the following website: <http://www.stonybrook.edu/ehs/fire/disabilities>.

Academic Integrity

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/

Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Electronic Communication

Email to your University email account is an important way of communicating with you for this course. For most students the email address is 'firstname.lastname@stonybrook.edu'. *It is your responsibility to read your email received at this account.* For instructions about how to verify your University email address see this:

<http://it.stonybrook.edu/help/kb/checking-or-changing-your-mail-forwarding-address-in-the-epo>

If you choose to forward your University email to another account, we are not responsible for undeliverable messages.

Religious Observances

See the policy statement regarding religious holidays at

http://www.stonybrook.edu/commcms/provost/faculty/handbook/employment/religious_holidays_policy.php

Students are expected to notify the course professors by email of their intention to take time out for religious observance. This should be done as soon as possible but definitely before the end of the 'add/drop' period. At that time they can discuss with the instructor(s) how they will be able to make up the work covered.