

PHY 683: Python for Scientific Computing

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

date/location: Mondays, 3:00–3:53 pm in ESS 450

Learning Goals:

The learning goal of this course is to enhance scholarship in an area of active research.

Credit:

This is a 1-credit course.

Contacting the Instructor:

e-mail: michael.zingale@stonybrook.edu (add “PHY 683” to the start of the subject line of any e-mail).

office hours: Mon. 10:00 am to 11:30 am

Thurs. 1:00 pm to 2:30 pm

Generally, I am in my office every day this semester, except for Wednesdays.

Webpage:

The webpage for this class is http://bender.astro.sunysb.edu/python_science .

Texts:

There are no textbooks for this class. There is a large amount of information available online—links will be provided on the class webpage.

Lecture Topics:

We will (try to) discuss the following topics in the course:

- *Basics of Computing* (0.5 lectures)
- *Introduction to Python* (3 lectures)
data structures and control statements, functions, classes, popular modules
- *IPython* (1 lecture)
- *Introduction to the NumPy array library* (1 lecture)
- *matplotlib for visualization* (1 lecture)
- *SciPy and numerical methods* (3 lectures)
- *MayaVi for 3-d visualization* (0.5 lectures)
- *Introduction to SymPy* (0.5 lectures)
- *Building applications* (1 lecture)
- *f2py and C extensions* (1 lecture)
- *System operations* (0.5 lecture)
- *GUIs* (1 lecture)

The actual course topics and time spent on each topic will depend on the interest and the participation level of the class.

Evaluation:

Students are expected to attend the class and to contribute to the discussions (by asking questions, proposing examples, or providing demonstrations of their own). As we meet only one hour per week, students show plan on spending time outside of class reviewing and practicing the material we discussed.

An ‘A’ student will be present at each class with questions about the material and, eventually, provide some basic examples from their own field to the class.

Required Syllabus Statements:

Americans with Disabilities Act: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, 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.

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/uaa/academicjudiciary/>

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.

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'

and the account can be accessed here. *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>

You can set up email forwarding using instructions here:

<http://it.stonybrook.edu/help/kb/setting-up-mail-forwarding-in-google-mail>

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

Religious Observances: See the policy statement regarding religious holidays at

<http://www.stonybrook.edu/commcms/provost/pdfs/Policy%20Statement%20Regarding%20Religious%20Holidays%20revised.docx>

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.

(information on the above required syllabus statements can be found at

<http://www.stonybrook.edu/commcms/provost/category/faculty/policies.html>)