MAT 331, Computer-Assisted Mathematical Problem Solving, Spring 2023 Syllabus

Mathematics S235

Tues, Thursday 1:15pm-2:35pm

This syllabus contains the policies and expectations that the instructor has established for this course. Please read the entire syllabus carefully before continuing in this course. These policies and expectations are intended to create a productive learning atmosphere for all students. Unless you are prepared to abide by these policies and expectations, you risk losing the opportunity to participate further in the course.

Instructor: Dr. Peter Lin (peter.lin.math@gmail.com) Office: Math Tower 4-103 Office Hours: See class website.

Course Description

Exploration of the use of the computer as a tool to gain insight into complex mathematical problems through a project-oriented approach. Students learn both the relevant mathematical concepts and ways that the computer can be used (and sometimes misused) to understand them. The particular problems may vary by semester; past topics have included cryptography, fractals and recursion, modeling the flight of a glider, curve fitting, the Brachistochrone, and computer graphics. No previous experience with computers is required.

Software We will primarily use the Python programming language. In class we will primarily use python via the interactive Jupyter notebook that runs in a web browser. The easiest way to get started is through Google Colab: https://colab.research.google.com.

Projects and Homework

There will be no exams in this course. Your grade will be based on homework and projects. There will be three projects, each of which will have programming and writing components. There will be homework due every week, except for the weeks the projects are due. You will have at least a week to work on each homework assignment. The only way to learn to program is by programming, so the homework will be essential. Many of the homework problems will require considerable thought rather than being slight variations of problems done in class. The workload for this course will be fairly evenly distributed throughout the semester; it will not be possible to "cram" at the end of the semester.

Required Resources

• Course Webpage:

math.stonybrook.edu/~bplin/teaching/spring2023/mat331

• Discussion board:

piazza.com/stonybrook/spring2023/mat331 All course related questions should be posted here.

Course resources All course resources will be posted on the course website. It is your responsibility to check the website regularly. If I post something there I will assume that you will check it within 24 hours.

Graded Components

- Homework will count for 25% of your grade. Your lowest homework score will be dropped.
- The three projects will each count for 25%.

Late Homework Policy

A student's homework assignment shall be considered late if it is not turned in to the instructor by the end of lecture on the due date. Late homework assignments will not be accepted.

Classroom Policies

Students are expected to arrive to lecture on time and remain until the lecture is concluded. (Leaving early creates distraction and is disrespectful to the instructor and your fellow students.) Cell phones should be silenced for the duration of the lecture. Tablet and laptop computers should not be used during lecture, except for taking notes.

Disability Support Services

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services (631) 632-6748 or

studentaffairs.stonybrook.edu/dss/

They will determine with you what accommodations 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 Disability Support Services. For procedures and information go to the following website:

www.sunysb.edu/facilities/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 instance of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at

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, and/or inhibits students' ability to learn.

Syllabus Revision

The standards and requirements set forth in this syllabus may be modified at any time by the course instructor. Notice of such changes will be by announcement in class and changes to this syllabus will be posted on the course website.