

MAT 331 - COMPUTER-ASSISTED MATHEMATICAL PROBLEM SOLVING

Fall 2023

Instructor:	James Waterman	Time:	TuTh 4:00pm–5:20pm
Email:	james.waterman@stonybrook.edu	Place:	Math Tower S-235S
Office:	Math Tower 3-118		
Grader:	Daniil Glukhovskiy		

Please read the entire syllabus carefully before continuing in this course.

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.

Office Hours: TuTh 2:30pm-3:30pm, or by appointment

Course Resources:

- **Course Website:** <https://sites.google.com/view/jwaterman/teaching>
- This course will use the software MATLAB. Stony Brook has a license to this software which you can access via the Stony Brook Sinc Sites or download directly from MATLABs parent company Mathworks by signing in with your Stony Brook login.

Prerequisites: C or higher in MAT 203 or 205 or 307 or AMS 261 or permission of instructor

Grading Policy:

- **Quizzes** – 25% of total grade
There will be in class quizzes to test basic usage of the core concepts with MATLAB.
- **Homework** – 25% of total grade
This will involve writing a short report stating the problem, describing how to solve it, the MATLAB code you used, and a table of pictures that illustrate your solution.
- **Projects** – 50% of total grade
Longer than a homework and usually involving a little outside reading. You must do two out of a selection of projects. One will be due in early November, the other in late November. Exact dates will be given at least a month beforehand. There will be a third optional project to improve your grade.

Make-up policy: Make-up quizzes will not be given, but may be dropped only if missed due to unforeseen circumstances beyond the student's control.

Student Accessibility Support Center Statement: If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. 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 the Student Accessibility Support Center. For procedures and information go to

the following website: <https://ehs.stonybrook.edu//programs/fire-safety/emergency-evacuation/evacuation-guide-disabilities> and search Fire Safety and Evacuation and Disabilities.

Academic Integrity Statement: 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 is 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/index.html

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 Student Conduct and Community Standards 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.

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