1 Times and Locations

- Lectures: Tuesday and Thursday in the (Old) Computer Science Building Room 2311 (the Wireless Seminar Room).

- Recitation: Tuesday 2:30 pm–3:23 pm in the (Old) Computer Science Building Room 2311 (the Wireless Seminar Room). Recitation is mandatory.

- MAB’s Office Hours: Tuesday 3:30pm-4:30pm (right after class)
  Thursdays 12pm-1pm (right before class).

- TA: Zane Sterling <zane.sterling@stonybrook.edu>.

- TAs’ Office Hours: TBD

2 What This Course is About

Topics

This class will introduce foundational concepts needed for advanced understanding of all areas of computer science. We will cover basics of sets, propositional logic and proof strategies, induction, recurrence relations and their solutions, lists, trees, graphs, elementary number theory, counting, and probability.

Course Objectives

- Provide students with a rigorous introduction to proof techniques including propositional logic and mathematical induction.

- Introduce recursion as a basic paradigm for computing with functions.

- Introduce fundamental discrete structures such as functions, graphs, and trees.

- Build a strong theoretical foundation for subsequent courses in the CS curriculum.

- Make you (effectively) smarter. 😊

- Help you appreciate the theoretical foundations underlying all of CS.
Other Objectives

- Make your introduction to SBU smooth.
- Introduce life skills.
  - How to become an A student (in college as well as high school).
  - How to study for classes efficiently.
  - How to understand what’s going on in a professor’s head.
  - How to do technical writing.
  - How to give effective presentations.
  - How to approach research.

Course Outcomes

- An ability to use logic and basic proof techniques, such as mathematical induction.
- An ability to compute with recursion as a basic paradigm.
- An ability to define and use discrete structures such as functions, graphs and trees.

3 How to Do Well in This Class

- Study. This is advanced material, which requires effort to digest.
- Do all the problem sets seriously.
- Go over lectures and lecture photos several times. (E.g., recopy your notes.)
- Best way to study for exams: Redo all the old problem sets and old exams from scratch.
- Work with a partner. Work in a group.
- Don’t get lost. If you are having trouble or falling behind, please come see me.
- Come to office hours.
- Start the homework early.
- When you don’t understand something, ask questions in class—to me, not whispering to your neighbor.

4 Prerequisites

- Mathematical maturity.
- Some programming background/undergraduate algorithms class.
5 Requirements

- One final.
- One midterm.
- 5-7 problem sets. (Every 1-2 weeks.)

6 Problem Sets

- Do problem sets in latex.
- Give an example/picture for each problem.
- Hand in both the PDF and a tarball of the source on blackboard.
- I may ask you also to submit hard copies, depending on how the TA chooses to grade.
- Please keep copies of all work that you hand in.
- Late assignments will not be accepted.
- If you work with people or have any other sources, you must cite them.

Problem-Solving Procedures on Homework

- Cite whom you work with.
- You must write up all your solutions yourself.
- You can share ideas, but it is plagiarism to share any part of your writeup.
- It is plagiarism to get your solution from any other student’s writeup.
- Don’t try to Google solutions. It’s not worth it. Figure it out your solution yourself (or with your homework partners). If you can’t, then leave the question blank. This is a class where you learn how to solve problems yourself, not surf the web.

7 Camera

- We’ll take photos of everything I write on the chalkboard. Then I’ll post on Blackboard.
- Some days I’ll forget my camera. If you have a camera, please bring it to serve as a backup. I’ll be grateful.
8 Grading

- Homework and participation will be worth approximately 15% of the grade, the midterm will be worth approximately 35% of your grade, and final will be worth approximately 50% of your grade. I reserve the right to adjust this formula for generating raw scores by a small amount. (If we don’t get enough grading support, I’ll adjust this formula a little more.)

- You get 25% of any question in an exam by saying I don’t know.

9 Dates

- The midterm will be on a Tuesday between October 18, 2016 and November 8, 2016. (Please let me know when your other exams are so we can avoid as many conflicts as possible.)

- The final exam takes place on Monday, December 19 from 5:30pm-8pm according to the Stony Brook final examination schedule in a location TBA.


10 Course Materials

- The online book Mathematics for Computer Science by Eric Lehman and Tom Leighton is the “official” textbook. This book is available for download on blackboard.

- I will also be following some lectures from the MIT course 6.042J / 18.062J Mathematics for Computer Science from Spring 2005. (See http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-042j-mathematics-for-computer-science-spring-2005/). The notes are also available for download on blackboard.

- A supplementary recommended book is Discrete Structures, Logic, and Computability by James L. Hein.

11 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/.

- I take academic honesty very seriously.

- It is your responsibility to ensure that you understand what constitutes academic dishonesty.
It is academically dishonest to hand in a solution that you don’t understand.

See the academic integrity assignment for more details and more explanation.

12 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.

13 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. If you have any questions, please contact Donna Di Donato in the Office of Undergraduate Academic Affairs (2-7080).

14 Scribing

If students want to scribe lectures in latex, please let me know. You will get some extra credit for the scribing, but not enough to make it worthwhile just for the grade. It’s worthwhile because of the experience doing technical writing.

If multiple students scribe the same lecture, then just the best set of scribe notes gets extra credit.