

COMP 283 – Discrete Structures

◆

Lectures: MW 8:00–9:15 am, in FB 009

Instructor: Sanjoy Baruah (baruah@cs.unc.edu). **Office:** FB-134. **Office Hours:** Immediately after class, or by appointment

Text: We will be using a draft copy of the text by Professor Jack Snoeyink, pdf copies of which are available off the course web-page. The text is available at no charge, in various formats – thanks, Jack!

Course web page: Located at <http://www.cs.unc.edu/~baruah/Teaching/2015-2Fa/>. Students are required to monitor this page frequently for announcements, assignments, lecture notes, etc.

Prerequisites: MATH 231 (Calculus of Functions of One Variable - I) or MATH 241 (BioCalculus I)

Course Description: Underlying the many applications of computers in our daily life are discrete structures like Boolean logics, relations, algorithms, finite state machines and graphs that have mathematical specifications. The primary aim of this class is to introduce these discrete structures and the formal proof techniques that support the production, verification, and maintenance of correct software.

Target Audience: A sound knowledge of discrete structures is a basic competency in computer science and a prerequisite to a deeper understanding of most topics in computer science. This course is therefore a prerequisite for many higher-level courses in computer science, and is hence targeted at students that intend to take such courses.

Course requirements:

- Several closed-book exams that are administered in class, testing your knowledge of the material being covered in the lectures.
- A comprehensive final exam. This, too, will be closed-book.

Grading criteria: The breakup of grades is tentatively set as follows

- Several in-class exams: 60%
- Final exam: 40%

Class Participation: This class will be far more enjoyable for everyone if all students come to class ready and willing to discuss the material to be covered. I plan to reward those who participate in class by increasing their final grade by up to half a letter grade. I also reserve the right to add a similar negative “reward” to those who do not observe appropriate etiquette in class.

Course Policies:

- **Grading policy:** Tests are graded by the TA under the instructor’s supervision. Graded tests are returned in class. If you wish to dispute the score assigned to you, it is your responsibility to initiate negotiation via email on this, within one week of the date that the tests are returned in class. No complaints will be considered after this one-week deadline.
- **Class Etiquette:** You are expected to maintain proper etiquette in class. This includes:
 - Not making a habit of arriving late, or leaving in the midst of class. If you must be late once or twice, take an aisle seat quietly; likewise if you must leave early. If this becomes habitual, you should drop the course.
 - Keeping cell-phones, pagers, etc. off during class. Not talking in class. Private discussion between students, even whispers, carry surprisingly well and are a real distraction to those seating near you and to the instructor.
 - Not using your laptop to browse the web

We will try to be courteous to you and we ask that you be courteous to others as well. Thank you.

- The **course final** is given in compliance with UNC final exam regulations and according to the UNC Final Exam calendar¹. It will be held during the 8am – 11am time-slot on **Friday, December 4th**.

Honor Code: The Honor Code and the Campus Code are in effect for this course. The following is adapted from a memo from the Chancellor.

The Honor Code prohibits lying, cheating, or stealing when these actions involve academic processes or University, students, or academic personnel acting in an official capacity. The Campus Code requires students to conduct themselves so as not to impair significantly the welfare or the educational opportunities of others in the University community. As a student at UNC-CH, you have accepted a commitment to the Honor Code and the Campus Code, and the principles of academic integrity, personal honesty, and responsibility on which they were founded more than 100 years ago.

Academic dishonesty in any form is unacceptable, because it circumvents the purpose of the University. The instructor and teaching assistant have a responsibility to report any possible Honor Code violations to the Student Attorney General. Please join us in supporting the Honor Code by signing the Honor Pledge on all written work, and consult us if you are uncertain about your responsibilities within this specific course.

Disclaimer: The professor reserves the right to make changes to the syllabus, including test dates. These changes will be announced as early as possible.

TOPICS TO BE COVERED

- Logic: propositional and first-order
- Sets, counting. Set operations and properties
- Relations and functions. Binary relations. Equivalences
- Recursion
- Proofs. Mathematical Induction
- Algorithms and Invariants
- Graphs and Trees
- Discrete Probability

1. <http://registrar.unc.edu/academic-calendar/final-examination-schedule-fall/>