CSE 2500: Introduction to Discrete Systems

Fall 2017

August 26, 2017

1 Administrative

Description This course is an introduction to discrete mathematics and its application in computer science. We will begin from basics describing sets and other elementary objects and work on both mathematical techniques and proof skills.

Contact Benjamin Fuller, benjamin.fuller@uconn.edu, 6-2122, ITE (Information Technologies Engineering) room 243.

Office hours (changes will be posted on HuskyCT): Mondays 3:30-4:30, Tuesdays 1-2pm. I encourage attending office hours. If you cannot make office hours, please ask technical questions on HuskyCT and email me for personal questions.

The grader for this class will be Chaoqun Yue, chaoqun.yue@uconn.edu. He will hold one hour of office hours per week.

Meeting and Notes Class meetings are in Austin 163.

Our class meetings will be a mix of lecture and discussion. Attendance is encouraged but not required. The course will be interactive and discussions may not be captured in required reading.

Textbook We will use the book Discrete Mathematics with Applications (4th Edition) by Susanna Epp. Both reading and some homework problems will be generated from this text.

I also recommend the *Book of Proof* by Richard Hammock as another good introduction to the area.

Communication The problem sets, solutions, readings, announcements, discussion will be posted on HuskyCT. For homework assignments please submit in person in class on the due date. Please ensure you receive emails from HuskyCT so you get announcements. In addition, I encourage students to post and answer questions about class material and problem sets. I will also answer questions but I encourage students to try and jointly answer questions. **Do not ask or answer homework problems.**

Personal questions should be directly to my email or handled in person during office hours. I will not answer emails from Friday 6pm to Monday 9pm.

Grading, assignments and exams There will be problem sets throughout the semester, expect six or seven assignments. These assignments are due in class and can be handwritten or typed. For those with particularly messy handwriting, typing will probably save frustration between you and the grader. Assignments will be graded no more than one week after they are due. There will be a final exam to be scheduled by the registrar. There will be two midterms on 10/2 and 10/30.

The class will be graded as follows:

- 40% homework assignments.
- 30% 2 midterm exams.
- 40% final exam.

Important caveat: In order to pass the class you must score about 50% on the final exam.

With that in mind grades will be assigned according to the scale in Table 1. As necessary the class may be curve upward but not downward.

Number Grade	Assigned Grade	Grade Points
90+	A	4.0
86-89	A-	3.7
82-85	B+	3.3
79-81	B	3.0
76-78	B-	2.7
73-75	C+	2.3
69-72	C	2.0
66-68	C-	1.7
65-67	D+	1.3
62-64	D	1.0
59-61	D-	.7
0-58 (Or at most 50 on final exam)	F	0

Table 1: Grading Scale

The last day to drop a class without a 'W' is Monday, Sept. 11. The last day to drop a class with a 'W' or convert to pass/fail is October 30.

Collaboration All homework assignments must be completed individually. It is okay for you to discuss a problem with a classmate as long you abide by the following condition:

- Each student you collaborate with should be named on the homework assignment.
- You must first consider each problem on your own and generate ideas on how to solve the problem.
- You may discuss problems and ideas jointly. The goal of collaboration is to understand the high level ideas of the problem. Do not go further than this.

Week	Topics
1	The language of mathematics.
2	Logical equivalence
3	Logic and transformations
4	Logic continued
5	Basic proof techniques
6	**First midterm** Integers and rationals
7	Proofs with integers
8	Indirect proofs
9	Sequences and induction
10	**Second midterm** Induction continued
11	Recurrence relations
12	Sets
13	Boolean algebra, paradoxs
14	Functions & review

Table 2: Tentative class schedule. Topics in weeks 13-14 to be adjusted based on student feedback.

- You must write solutions completely on your own.
- The final exam will be an individual effort. As noted above, students cannot pass the class without scoring at least 50% on the final exam.
- Do not use other resources (outside of your textbooks and collaborators) to attempt to find the problem or the solution. This includes using the internet to search for parts of the problem.

2 Course contents

This course will focus on discrete mathematics and its application to computer science.

Course Objectives By the end of this course, you will be able to:

- Write clear, thorough, and precise proofs using logic. Determine whether an argument is logically sound.
- Understand discrete mathematic concepts including functions and graphs.
- Analyze recurrence relations that arise in computer science.

Tentative Class Schedule Table 2 contains a tentative plan for the topics week by week. We'll adjust the schedule as needed.

3 Policies

Academic Honesty This course expects all students to act in accordance with the Guidelines for Academic Integrity at the University of Connecticut.

If you have questions about academic integrity or intellectual property, you should consult with your instructor. Additionally, consult UConn's guidelines for academic integrity.

The collaboration policy described above is designed to allow students the resources to succeed while ensuring they learn and master the material. If you are unsure if something is acceptable according to the collaboration policy, talk to me!

Violations of this policy will be considered violations of the academic integrity policy and will be reported to the Academic Integrity Hearing Board. Consequences may include (but are not limited to) failure of the class. Example violations include: not reporting collaborators, jointly writing solutions, copying or plagiarizing solutions from other sources, and cheating on the exam.

Student Conduct Code Students are expected to conduct themselves in accordance with UConn's Student Conduct Code.

Copyright My lectures, notes, handouts, and displays are protected by state common law and federal copyright law. They are my own original expression. Students may take notes. In addition, students will be consulted before using their solutions either with or without their name.

Students with Disabilities The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020, or `http://csd.uconn.edu/`.

Final Exam Policy In accordance with UConn policy, students are required to be available for their final exam and/or complete any assessment during the time stated. If you have a conflict with this time you must obtain official permission to schedule a make-up exam with the Office of Student Support and Advocacy (OSSA). If permission is granted, OSSA will notify the instructor. Please note that vacations, previously purchased tickets or reservations, graduations, social events, misreading the assessment schedule, and oversleeping are not viable reasons for rescheduling a final.