CSCI 15000

Discrete Structures Summer 2023

Hamed Fazli Jun 2023

Text: Epp, Susanna S.; Discrete Mathematics with Applications, Fourth Edition; Brooks/Cole–CENGAGE Learning; 2011; ISBN-13 978-0-495-39132-6

Web: CUNY Blackboard

Contact: All inquiries must be asked in class (we have 4 Days of classes). Only emergency inquiries can email me.

Email: hfazli@gradcenter.cuny.edu

Recitation: we will have recitation in one of the online classes. However, the recitation would be held if you have any questions. Otherwise, we will have the normal classes.

Learning Outcomes: The successful student will acquire the mathematical foundations needed for later computer science classes such as automata theory, cryptography, relational database theory, data structures, etc. These students will understand and be able to construct proofs, especially those involving discrete structures. These students will demonstrate this mastery by solving problems and supplying proofs 1 on written instruments such as homework, quizzes, and exams. This class directly supports Departmental Learning Outcomes 1A ("demonstrate an understanding of the basic foundations ... of mathematics and statistics ...") and 1C ("display knowledge of the theory of computation and algorithms").

Lectures, Recitations, and Tutoring: You should be scheduled for three to four lectures and maybe 1 recitation each week. Our classes are held based on the schedules, MoWe 5:45 – 7:50 PM online synchronous and TuTh 5:45 – 7:50 PM. In class, we will discuss the course materials and we will cover all the chapters. Asking questions is encouraged. However, please ask questions related to the homework in the recitation classes. In class, I will present the materials using PowerPoint slides. However, the slides will not be shared with anyone. You must be in class and take your notes.

Grades:

- **Homework:** we will have 10 chapters and 1 homework assignment for each chapter. In total,3 or 4 of them will be chosen randomly and graded which will cover 40 % of your final grade.
- **Quizzes:** we will have 3 or 4 quizzes in which 30 % of the final grade will be covered by these quizzes.
- **Final:** we will have 1 final that will be 20 % of the final grade.
- **Participation:** there will be 3 or 4 attendance lists which will cover 10% of the total grade.

Topics: We will try (and probably not succeed) to cover the following topics according to this schedule. Note that we will have 4 lectures and 8 hours per week. And we need to study 2 chapters per week.

Week	Subject	Chapter
1	Introduction and Compound Statements Compound Statements and Arguments	Ch1 and 2
2	Predicates and Quantification, Arguments Arguments and Direct Proofs Direct proofs and indirect proofs	3.1-3.3 3.3, 4.1, 4.3 4.4, 4.5
3	Indirect Proofs Sequences and Induction Complete Induction and Recursive Definitions Recurrence relations, Sets, and Russel's paradox	4.6-4.7 5.1-5.3 5.3-5.6 5.7, 6.1, 6.2, 6.4
4	Functions, composition, bijections Cardinality, Counting, and Cantor diagonalization. Pigeonhole principal $\binom{n}{r}$	7.1-7.3 7.4, 9.1 9.2, 9.3
5	Probability, Bayes' theorem Graphs, Paths, Tree	9.4,9.5,9.9 10.1-10.5

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cyberbullying as the use of email, websites, instant messaging, chat rooms, text messaging and digital cameras to antagonize and intimidate others. Disrupting a teleconferencing platform (such as Zoom/Skype/Blackboard Collaborate Ultra) is a federal crime. ADA Compliance: In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical and/ or Learning) consult the Office of AccessABILITY located in Room E1124 to secure necessary academic accommodations. For further information and assistance please call (212-772-4857)/TTY (212-650-3230).