

CSCE 222-200 Discrete Structures for Computing

Fall 2024

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Review for Midterm I

The midterm exam I will be held on Thursday, September 26, from 3:55 PM to 5:10 PM. The exam is taken in class, and open-book and open-notes.

TOPICS COVERED:

1. Proof by induction, by contradiction, and by other methods

Basic Requirement: Be able to *formally* present *valid* proofs using the techniques.

References: Lecture Notes #1 and #2, Sections 1.7-1.8 of the textbook.

Practice Exercises: Questions in Lecture Notes #1 and #2.

2. Propositional and predicate logic

Basic Requirement: Understand basic definitions and terminologies in propositional logic and predicate logic, and be able to derive logic equivalences.

References: Sections 1.1-1.6 of the textbook, and the handout “Checklist in Logic”.

Practice Exercises: Supplementary Exercises in Chapter 1 (pages 117-119), Questions 3, 7, 23, 25, 29, 31, 37. (Remark: hints/answers of these questions are given in the textbook.)

3. Sets, functions, sequences, sums

Basic Requirement: Understand basic definitions and terminologies in set theory, functions, sequences, and formulas for sums of arithmetic/geometric sequences.

References: Sections 2.1-2.4 of the textbook.

Practice Exercises: Supplementary Exercises in Chapter 2 (pages 197-198), Questions 3, 5, 7, 9, 13, 19, 23, 25. (Remark: hints/answers of these questions are given in the textbook.)

4. Algorithms

Basic Requirement: Understand the big-O notation.

References: Sections 3.1-3.2 of the textbook.

Practice Exercises: Exercises in Section 3.2 (pages 228-231), Questions 1, 7, 9, 17, 19, 21, 25. (Remark: hints/answers of these questions are given in the textbook.)