Department of Electrical and Computer Engineering
CSE 173: Discrete Mathematics, Sec – 4
Course Outline – Summer 2023

Instructor: Silvia Ahmed (SvA)
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Office Hour:

Sunday, Tuesday	9:30 AM – 10:30 PM
Monday, Wednesday, Thursday	10:00 AM - 11:00 AM

Credit: 3 Credit Hours

Course Outline:

Discrete mathematics is the study of mathematical structures that are fundamentally discrete rather than continuous. The objects studied in discrete mathematics – such as integers, graphs, and statements in logic varies in a discrete way, that is, they have distinct and separated values. Therefore, it excludes topics in "continuous mathematics" such as calculus and analysis. This course is also a prerequisite for analysis of algorithms which is fundamental to any computing practices that require optimal performance in the face of limited resources.

Tentative Marks Distribution:

Attendance	5%
Quizzes (Best **n-3** out of **n**)	15%
Midterm 1	15%
Midterm 2	25%
Final Exam (comprehensive)	40%

Text Book:
1. "*Discrete Mathematics and Its Application*", Kenneth H. Rosen, 8th Edition, McGraw-Hill.
2. Lecture notes

Reference Materials:
1. *"Discrete Mathematics with Applications"*, Susanna S. Epp, 4th Edition, Cengage Learning

General Guidelines:

1. Attentive attendance in classes is mandatory.
2. Distracting others in class is violating others rights to be attentive. So food, laptop or cell phones are not allowed during class time. However, you may drink water, soft drinks, and/or coffee at your convenience.
3. There will be a **quiz every week at the second class** unless otherwise announced in the class/canvas.
4. **No make-up exams** will take place for missed quizzes. If you miss a quiz, you will get zero for that.
5. Midterm exams may be considered for a make up only if the faculty member is notified of any genuine reason prior to the exam.

6. **Final exam** will be **comprehensive**.

7. Any means of unauthorized assistance in preparing materials which a student submits as original work is deemed to be cheating and constitutes grounds for disciplinary action. Serious instances may be referred to the Disciplinary Committee in the Office of the Vice Chancellor.

Course Objectives:

The objectives of this course are:

1. construct mathematical arguments using propositions, predicates, logical connectives, quantifiers, and rules of inference as well as verify them;
2. select appropriate proof methods (e.g. direct proof, proof by contradiction, proof by contraposition, existence proof, etc) to build simple mathematical proofs;
3. identify the types and properties of sets, relations, functions, graphs, and trees and prove simple mathematical properties of them;
4. describe recursive function, sequence, or the sum of a series using recurrence relation and solve that using forward/backward substitution method;
5. prove basic properties of number theoretic operations (e.g. congruence, mod, GCD, and LCM) and apply those to solve simple related problems;
6. apply mathematical induction to prove properties of mathematical objects, series, etc.;
7. apply the knowledge of summation notation and basic counting techniques to solve simple mathematical problems.

Course Outcomes:

Upon Successful completion of this course, students will be able to:

Sl.	CO Description	Weightage (%)
CO1	**demonstrate** valid arguments using propositions, predicates, logical connectives, quantifiers, and rules of inference	25%
CO2	**identify** basic types and properties of the following mathematical objects: sets, functions, relations, sequences, and graphs	25%
CO3	**prove** properties of number theoretic operations and mathematical objects using mathematical induction or other appropriate proof methods	25%
CO4	**apply** counting techniques, summation notation, and substitution method to solve simple mathematical problems .	25%

Grading Policy:

As per NSU grading policy available in http://www.northsouth.edu/academic/grading-policy.html