MATH 3400 / LGIC 2100   Discrete Mathematics I   Professor Andre Scedrov

Prerequisites: Math 1140 (previously Math 114) or permission of the instructor.

Textbook: Alan Tucker, "Applied Combinatorics", Wiley, Sixth Edition, 2012. ISBN-10: 0470458380. ISBN-13: 978-0470458389.

Topics Covered

Textbook Chapters 1-2, some of Chapter 3, Chapter 5, Chapters 7-8, Chapter 10, and some selected topics:

Chapter 1. Elements of Graph Theory: Graph Models, Isomorphism, Edge Counting, Planar Graphs.

Appendix A.2. Mathematical Induction.

Chapter 2. Covering Circuits and Graph Coloring: Euler Cycles, Hamilton Circuts, Graph Coloring, Coloring Theorems.

Chapter 3. Trees: Properties of Trees.

Chapter 5. General Counting Methods for Arrangements and Selections: Two Basic Counting Principles, Simple Arrangements and Selections, Arrangements and Selections with Repetitions, Distributions, Binomial Identities.

Chapter 7. Recurrence Relations: Recurrence Relations Models, Divide-and-Counter Relations, Solution of Linear Recurrence Relations, Solution of Inhomogeneous Recurrence Relations.

Appendix A.1. Basic Set Theory.

Chapter 8. Inclusion-Exclusion: Counting with Venn Diagrams, Inclusion-Exclusion Formula.

Chapter 10. Games with Graphs: Progressively Finite Games, Nim-Type Games.

Basic Course Information

"Bring Back Examinations" combine elements of homework and in-class timed assessment. Problems for the examination will be assigned as the course proceeds and each student will select from among them those problems to complete in class _without_ the benefit of any text or notes.

There will be two "bring back" in-class midterms, Thursday, October 5, 2023 and Thursday, November 16, 2023, respectively, and each worth 25% of the grade. Each midterm assignment will have at least a two-week lead time, during which there will be no homework.

The final exam will also be "bring back" in-class, during the final exams period and will be worth 30% of the grade. The "bring back" in-class final exam will be cumulative and will be assigned with at least a two-week lead time, during which there will be no homework.

Most other weeks during the semester there will be traditional homework, to be completed at home and turned in to Canvas online. Total homework will be worth 20% of the grade. One lowest score homework can be dropped.