

## Course Information

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<b>Instructor:</b>	<i>Phone number:</i>	(502)852-5845 (x5845)
	<i>Office:</i>	Natural Sciences Building 239
	<i>Office hours:</i>	Tuesday 2:30–3:30, Wednesday 11–12
	<i>Alternative office hours:</i>	Wednesday 12–1, Thursday 2–3

**Lecture:** TR 4:00–5:15 PM in HUM217

**Prerequisites:** MATH 206 or EAC 102 and MATH 325, or permission of instructor.

**Description:** Pigeon-hole principle, counting techniques, binomial coefficients, generating functions, stirling and catalan numbers, permutations and graphs.

**Textbook:** *Applied Combinatorics with Problem Solving* by Jackson and Thoro. This book is out of print and copies can be obtained at Gray's Bookstore only.

**Objectives:** In this class, we will study the fundamentals of discrete mathematics, including deductive proof, inductive proof, counting techniques, binomial coefficients, the pigeonhole principle, the inclusion-excluding principle, recurrence relations, generating functions, and graphs.

**Responsibilities:** You are responsible for attending class on a regular basis and maintaining comprehension of the scheduled class objectives for each day. You are expected to be active participants in class, to turn in assignments promptly, and to attend examinations.

**Special needs:** Any scheduled absence during a quiz or examination, or any other special needs, *must* be brought to my attention before the end of the second week of class. Unscheduled absences will be handled on a case-by-case basis, with exceptions generally made only for documented emergencies.

**Honesty:** There are many resources available to help you succeed in this class, including consultation during office hours, secondary textbooks, and cooperation with other students. It is important, however, that all papers handed in be the result of your individual comprehension of the course material. Duplication of others' work is both a disservice to your own education and a serious violation of the university's academic honesty policy.

**Grades:** Homework problems account for 25% of your grade. The lowest score will be discarded. Each of the two midterm examinations will be 20% of your grade, the final examination will contribute 30%, and attendance and participation will make up 5%. A 90% overall guarantees a grade of A–, 80% guarantees a B–, 70% guarantees a C–, and 60% guarantees a D–. Grade cutoffs may be lower than those indicated here, but will not be higher.

**Changes:** The syllabus is subject to change. Changes will be announced in class and updated online.

The schedule is tentative and subject to change, but exam and homework dates are fixed, barring extraordinary circumstances or class consensus.

Week	Tuesday	Thursday
1	January 8 Section 1.1	January 10 Section 1.2
2	January 15 Section 1.3	January 17 Section 1.4
3	January 22 Section 2.1 PS #1 due	January 24 Section 2.2
4	January 29 Section 2.3 PS #2 due	January 31 Section 2.4
5	February 5 Section 2.5 PS #3 due	February 7 Section 2.6
6	February 12 Exam #1 PS #4 due	February 14 Section 3.1
7	February 19 Section 3.2 PS #5 due	February 21 Section 3.3
8	February 26 Section 7.1 PS #6 due	February 28 Section 7.2
9	March 4 Section 7.3 PS #7 due	March 6 Section 7.4
10	Spring break	
11	March 18 Section 8.1 PS #8 due	March 20 Section 8.2
12	March 25 Section 4.1 PS #9 due	March 27 Section 4.2
13	April 1 Exam #2 PS #10 due	April 3 Section 5.1
14	April 8 Section 5.2 PS #11 due	April 10 Section 5.3
15	April 15 Section 5.5 PS #12 due	April 17 Review
16	Tuesday, April 29, 5:30–8:00 Final Exam	

## Problem Sets

It is important that you show your work or outline the process of discovery for each problem. No credit will be given for answers which do not include work. Questions in boxes are more difficult and need not be done, but may be completed for extra credit.

- Problem Set #1 (due on January 22):
  - Section 1.1: 4, 6, 12, 16(a), 16(b).
  - Section 1.2: 6, 10, 20.
  - Section 1.3: 2, 10, 12, 18.
  - Section 1.4: 4, 8, 10, 17.