

# Math 4473: Combinatorics

MWF 9 – 10 IN BOYD 304

Instructor: David Leach (cleach@westga.edu)

## 1 Topics

fundamental principles of counting, combinations and permutations, selections and arrangements, binomial identities, generating functions, partitions, linear recurrence relations, non-homogeneous recurrence relations, inclusion-exclusion, other topics as time allows

## 2 Objectives

- A thorough understanding of the basic principles of counting, combinations and permutations. (L7, L10)
- An understanding of generating functions. (L7, L10)
- The ability to use combinatorial arguments in proofs. (L2, L10)
- The ability to use combinatorial models in applications. (L9)
- A thorough introduction to the theory of linear recurrence relations. (L7, L9)
- An introduction to Polya counting and combinatorial games. (L10)

## 3 Prerequisites

MATH 3003 (you may take MATH 3003 as a corequisite with the permission of the instructor)

## 4 Text

*Applied Combinatorics*, 4<sup>th</sup> Edition, by Alan Tucker.

## 5 Evaluation

Test Average	65%
Assignments	10%
Final Exam	25%

## 5.1 Homework

We will have homework from each section. Homework will not be graded. You are allowed to work together on the homework assignments.

## 5.2 Assignments

There will be a few assignments throughout the semester that will account for 10% of your grade.

## 5.3 Tests

There will be five in-class tests, roughly one every three weeks. **Tentative** dates for the tests are Sept 5, Sept 26, Oct 17, Nov 7, Nov 24. These dates are subject to change.

## 5.4 Final Exam

The final exam will be held on Wednesday, Dec 10, 8-10 am. It will be comprehensive.

## 6 Attendance

If you miss a class, you are responsible for obtaining any information that you missed. If you miss a test, you must have a university-approved excuse in order to take a make-up test.

## 7 Office Hours

My office is 317 Boyd. My posted office hours are 11-12 and 1:30-3:30 on Monday, Wednesday, and Thursday; and 9:00-9:30 and 10:30-11:00 on Thursday. I'm also available at other times – you can call or email me to set up an appointment.

## 8 Website

My website (<http://www.westga.edu/~cleach/>) contains useful stuff like my schedule, contact information, and links to a few websites about combinatorics. It also contains some useless stuff like GPS maps and a big picture of an iceberg.

## 9 Other Useful Information

- The final exam is Wednesday, Dec 10, 8-10 am.
- The last day to withdraw is Thursday, October 9.
- Thanksgiving Holidays are November 26-28.