DISCRETE MATHEMATICS 21-228

Spring 2002

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Office hours M,T,W,Th,F 9.30–10.00

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Class Schedule:
All Sections: MWF 2.30, Baker Hall A51.

Recitations:

Section	Day	Time	Place
A	Tuesday	1.30	DH2105
B	Tuesday	2.30	BH235B

Copies of slides: (as .ps files)

http://www.math.cmu.edu/ af1p/DM/DM.html

The following text book covers 3/4 of the material in the course.

Introductory Combinatorics

by

Kenneth P.Bogart

Published by Harcourt, Brace Jovanovich

Topics Covered

- Combinatorics
  1. D0 Introduction to counting problems
  2. D1 Selection and Binomial Coefficients
  3. D2 Properties of Binomial Coefficients
  4. D3 Multi-sets and Multinomial Coefficients
  5. D4 Counting grid paths and the ballot problem
  6. D5 The pigeon-hole principle
  7. D6 Discrete Probability 1
  8. D7 Discrete Probability 2
  9. D8 Discrete Probability 3
  10. D9 Discrete Probability 4: Random Variables
  11. D10 Discrete Probability 5: Inequalities
  12. D11 Recurrence Relations 1: Linear Recurrences
  13. D12 Recurrence Relations 2: Divide and Conquer
  14. D13 Recurrence Relations 3: Partitions of sets
  15. D14 Recurrence Relations 4: Derangements
  16. D15 Recurrence Relations 5: Generating Functions

17. D16 Inclusion-Exclusion

Items Most of this is covered in Chapters 1,2,3 of Bogart.

- Graph Theory

  1. D17 Graph Theory 1: Definitions
  2. D18 Graph Theory 2: Paths, Walks and Bipartite Graphs
  3. D19 Graph Theory 3: Trees
  4. D20 Graph Theory 4: Euler tours and Hamilton cycles
  5. D21 Graph Theory 5: Matchings
  6. D22 Graph Theory 6: Ramsey Theory
  7. D23 Graph Theory 7: Digraphs

  Most of this is covered in Chapters 4,5 of Bogart, Note that I will not cover all of the first 5 chapters of Bogart. I have added material on Discrete Probability because of its general usefulness.

Grading

Almost Weekly Homeworks, Four Tests.
Test Dates: Feb. 8, Feb. 27, Mar. 27, May 3.

Homework	10%
4 Tests	90%

I will base your grade on your best 8 homeworks and your best 3 tests.

A: $TOTAL \geq 85\%$
B: $75\% \leq TOTAL < 85\%$
C: $65\% \leq TOTAL < 75\%$
D: $55\% \leq TOTAL < 65\%$