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DISCRETE MATHEMATICS 21-228

Fall 1999

Professor A.M.Frieze.

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Class Schedule:

Section A,B: MWF 12.30, Scaife Hall 212.

Recitations: T 2.30, WEH8427; T 3.30, DH1211

Copies of transparencies: (as .ps files)

~ af1p/public/teaching/UDMF99

To print file.ps simply type:

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print ~ af1p/public/teaching/UDMF99/file.ps
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This one is called SyllF.ps and others are D0.ps,D1.ps, etc.

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

Introductory Combinatorics

by

Kenneth P. Bogart

Published by Harcourt, Brace Jovanovich

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Topics Covered

- Combinatorics

1. Basic Counting, Selection and Binomial Coefficients
2. Pigeon-Hole Principle
3. Discrete Probability
4. Probabilistic Method
5. Recurrence Relations
6. Inclusion/Exclusion
7. Generating Functions

Items 1,4,5,6 are covered in Chapters 1,2,3 of Bogart.

- Graph Theory

1. Euler Tours and Hamilton Cycles.
2. Connectivity and Trees.
3. Independent Sets and Colouring.
4. Ramsey Theory.
5. Matchings

Most of this is covered in Chapters 4,5 of Bogart,

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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: Sep. 17, Oct. 6, Nov. 8, Dec. 3

Homework	10%
4 Tests	90%

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

A: $TOTAL \geq 80\%$

B: $70\% \leq TOTAL < 80\%$

C: $60\% \leq TOTAL < 70\%$

D: $50\% \leq TOTAL < 60\%$

In the event that there are fewer than 1/4 A's, I will re-scale to produce this many.

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Something to think about

$A_1, A_2, \dots, A_{15}$ are *arbitrary* sets, each containing 5 elements. Let $A = \bigcup_{i=1}^{15} A_i$. Thus $5 \leq |A| \leq 75$. Show that it is possible to colour the elements of A Red or Blue so that each A_i contains at least one Red element and at least one Blue element.

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