

Math 5320
Butts
Fall 05
8/23/05

**Usual and Unusual Problems
Involving Discrete Mathematics
Overview**

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Time: Tuesdays 7:00 p.m. – 9:45 p.m.

Office Hours: MW 3–5 pm; 7:15 pm–8:00 pm[in CB building], T. 3–6 pm and by appt.

Course Materials: Discrete Mathematics Through Applications, 2nd ed, Crisler et al, W.H. Freeman, 2000 and several handouts.

Three Units:

1. Number Theory [Identification Numbers, Coding, and Public Key Cryptography]
2. Finite Graph Theory
3. Combinatorics

Technology: TI-84+[or equivalent] , WINDISC, Internet applets TBA, ...

Assessment:

- Several portfolio assignments including solving problems; writing about questions involving discrete mathematics; finding/designing activities/problems for your class; etc. - [30%]
- Two Tests - partial take home format [50%]
- Final Project - groups of 2 [20%]

Discrete mathematics is a rapidly growing and increasingly used area of mathematics with many practical and relevant applications. Because it is grounded in real world problems, discrete math lends itself easily to implementing the recommendations of the NCTM Standards.

Discrete mathematics can make mathematical concepts come alive for your students. It's an excellent tool for improving reasoning and problem-solving skills, and is appropriate for students at all levels and all abilities. Teachers have found that discrete mathematics offers a way of motivating unmotivated students and challenging honors students at the same time.

Problems in discrete mathematics are often simply stated and accessible to students with little mathematical background, including those who have not mastered algebra. On the other hand, many problems are complex, leading students to new insights and knowledge. Questions that seem simple give rise to related questions that are quite challenging. As a result, the topics are accessible and interesting both to students that are accustomed to success and already may be contemplating scientific careers, as well as to students who are accustomed to failure and perhaps need a fresh start in mathematics.

Because discrete mathematics deals with complex problem solving, it has widespread uses in a variety of fields. Many current applications to areas such as networking, telecommunications, computer design, cryptanalysis, robotics, social choice theory, and operations research involve discrete mathematics. Students specializing in discrete mathematics will find a wide range of career opportunities open to them.

Drop Date Info: <http://www.utdallas.edu/calendar/index.php?search=withdraw>

Academic Honesty: In this course students will conform to the University rules for academic honesty. For more information see <http://www.utdallas.edu/judicialaffairs/index.html>

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