

Discrete Mathematics (Math 330) — Winter, 2009

Location and Time: MTThF, Bouillon 106, 9:00-9:50; W, Bouillon 103, 9:00-9:50

Instructor: Dr. Dan Curtis

Office: 107a Bouillon

Office Hours: MTWThF 11:00 – 11:50 and by appointment.

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Final Exam: Wednesday, March 18, 8:00-10:00 am

Textbook: No Textbook Course materials will be in the form of class notes and handouts.

Course Content: There will be a series of handouts containing notes and problem sets. The topics to be covered are:

1. Techniques and results on integer divisibility, congruences, modular arithmetic, and encryption methods including the RSA method.
2. Mathematical induction and its relation to recursion.
3. Solving problems by recursion. Explicit solution of linear recursions.
4. Elements of graph theory: types of graphs, graph traversal, Hamiltonian and Euler circuits, planarity.

Classwork and Homework: You are expected to attend class daily. Problem sets will be assigned to be handed in and graded. See the section on grades and the class schedule for specifics.

Mathematica Lab: On certain Wednesdays we will meet in the Bu103 Computer Lab where you will learn to use the *Mathematica* software package to solve problems of the types being studied in this course.

Course Prerequisites: Mathematics 260 (Sets and Logic) is a prerequisite for this course. We will be proving things in this course, so you must know how to read and do proofs. You don't have to be an expert at proofs, since one goal of this course is to increase your level of sophistication in dealing with theoretical mathematics, but you must know the basics going in.

Learner Outcomes: Upon successful completion of this course, the student will be able to:

- understand algorithms and formulate algorithms to solve problems;
- work with congruences and apply them to devise schemes for encryption of messages.
- use the various forms of induction to give a variety of proofs;
- formulate recursive algorithms or recursive definitions;
- use recursion to solve problems be able to solve linear recursions with constant coefficients;
- formulate and solve problems using ideas of graph theory;
- how to use *Mathematica* to solve a variety of problems in this course

Grading: Your course grade will be determined by the following:

1. Two in-class exams counting for up to 100 points each.
2. Four take-home assignments, worth 50 point each.
3. A comprehensive final exam worth up to 100 points. (Comprehensive, but weighted toward material covered after the second exam.)

Your point total will be the sum of your in-class exams, your take-home assignments, and your score on the final exam, a maximum possible 500 points. Your course grade will be determined by the percentage p of these points you earn, according the following scale:

$90 \leq p$	A	$65 \leq p < 77.5$	C
$89 \leq p < 90$	A-	$64 \leq p < 65$	C-
$87.5 \leq p < 89$	B+	$62.5 \leq p < 64$	D+
$80 \leq p < 87.5$	B	$50 \leq p < 62.5$	D
$79 \leq p < 80$	B-	$p < 50$	F
$77.5 \leq p < 79$	C+		

Students with disabilities: If you require accommodation based on a documented disability, have emergency medical information to share, or need special arrangements in case of emergency evacuation, please discuss the situation with me as soon as possible

Class Schedule (47 class days)

Date	Class Activity	Date	Class Activity
01/05		02/16	HOLIDAY: Presidents Day
01/06	Classes begin	02/17	
01/07		02/18	
01/08		02/19	
01/09		02/20	
01/12		02/23	Exam 2
01/13		02/24	
01/14		02/25	
01/15		02/26	
01/16		02/27	
01/19	HOLIDAY: MLK Day	03/02	
01/20		03/03	
01/21		03/04	
01/22		03/05	
01/23		03/06	
01/26	Exam 1	03/09	
01/27		03/10	
01/28		03/11	
01/29		03/12	
01/30		03/13	Last day of classes
02/02		03/16	Prof. Dev./ Student Study Day
02/03		03/17	
02/04		03/18	Final Exam (8:00-10:00 pm)
02/05		03/19	
02/06		03/20	
02/09			
02/10			
02/11			
02/12			
02/13			