Discrete Mathematics (Math 330-001) — Spring, 2013

Location and Time: Hertz 121, 1:00-1:50, MTWThF

Instructor: Dr. Dan Curtis

Office: 107a Bouillon

Office Hours: MWF 2:00-4:00 pm or by appointment.

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Final Exam: Thursday, June 6, Noon-2:00 pm

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, conguences, modular arithmetic, and encryption methods including affine encryption and 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. The handouts will contain problems to be solved; these will not be handed in for grading, but it is essential that you work these problems. Many exam problems will be very similar to those appearing in the notes. Time will be available in class for discussion of these problems.

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:

- use the Division Theorem, the Euclidean algorithm, and the Extended Euclidean Algorithm and apply them 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 and solve linear recursions with constant coefficients;
- formulate and solve problems using ideas of graph theory.

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

1. Three in-class exams each worth up to 100 points. Of these, only your best two scores will count, that is, your lowest score will be dropped. The dates of these exams are given in the schedule part of this syllabus.

2. A final exam worth up to 100 points. (The final exam cannot be dropped.)

Your point total will be the sum of your in-class exams and your score on the final exam, a maximum possible 300 points. Your course grade will be determined by the percentage p of these points you earn, according the following scale:

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

No makeup exams will be given. If you miss an exam, it will be the one you drop.

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

Course Schedule (48 class days)

Date	Class Activity	Date	Class Activity
03/25		05/06	
03/26	Classes begin	05/07	
03/27		05/08	
03/28		05/09	
03/29		05/10	
04/01		05/13	
04/02		05/14	
04/03		05/15	
04/04		05/16	
04/05		05/17	
04/08		05/20	
04/09	Exam 1	05/21	Exam 3
04/10		05/22	
04/11		05/23	
04/12		05/24	
04/15		05/27	HOLIDAY: Memorial Day
04/16		05/28	
04/17		05/29	
04/18		05/30	
04/19		05/31	Last day of classes
04/22		06/03	Prof. Dev. Day
04/23		06/04	
04/24		06/05	
04/25		06/06	Final Exam: Noon-2:00 pm
04/26		06/07	
04/29			
04/30	Exam 2		
05/01			
05/02			
05/03			