

# Discrete Mathematics (Math 330) — Winter, 2008

**Location and Time:** MTThF, Bouillon 101, 2:00-2:50; W, Bouillon 103, 2:00-2:50

**Instructor:** Dr. Dan Curtis

**Office:** 107a Bouillon

**Office Hours:** MTWThF 11:00 – 11:50. Actually, you can come by my office at any time and, unless I am occupied, I will be happy to talk with you.

**Office Phone:** 963-2125

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**Web Page:** [www.cwu.edu/~curtiswd](http://www.cwu.edu/~curtiswd)

**Final Exam:** Friday, March 14, 12:00-2:00 pm

**Textbook:** Discrete Mathematics with Applications (3<sup>rd</sup> edition) by Susanna Epp  
**The textbook is required.**

**Course Content:** We will cover material from chapters 4, 7, 8, 10, and, time permitting, 11, together with additional materials that will be handed out in class. The main topics to be covered will be

- Basic properties of divisibility, division theorem, Euclidean algorithm
- Modular arithmetic and properties of congruences
- Basic ideas of cryptology, including the RSA encryption method.
- Methods of mathematical induction
- Recursive algorithms and the relation with induction
- Solving linear, constant-coefficient recursions
- Basic concepts, properties, and applications of graphs

**Classwork, Homework, and the Course Notebook:** You are expected to attend class daily. Homework will be assigned from the text and on materials handed out in class. All such problems will be carefully written up and included in your Course Notebook, along with all materials handed out in class. The notebook will be handed in at the time of the two in-class exams and at the final exam. Each time, the notebook will be given a grade of up to 25 points, based upon the work included in it.

**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.

**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.

**Learner Outcomes:** Upon successful completion of this course, the student will understand:

- how modular arithmetic works and how to apply it (applications include the RSA encryption method)
- what the various forms of induction are and how to use them
- what a recursive algorithm or a recursive definition is, and how to use them
- what a recurrence relation is and how to solve linear recursions with constant coefficients
- basic concepts of graph theory and how to use graphs to analyze a variety of problems
- 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. At the time of each exam (including the final exam), your class notebooks will be collected and given a grade of up to 25 points, based upon the problems that are to be included therein.  
Thus, the notebook grade is worth up to 75 points.
3. A comprehensive final exam worth up to 100 points.

Your point total will be the sum of your two in-class exams, your notebook scores, plus your score on the final exam, a maximum possible 375 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 (40 class days)**

<b>Date</b>	<b>Class Activity</b>	<b>Date</b>	<b>Class Activity</b>
12/31		02/11	
01/01		02/12	
01/02		02/13	
01/03	Classes Begin	02/14	
01/04		02/15	
01/07		02/18	<b>Holiday: President's Day</b>
01/08		02/19	
01/09		02/20	
01/10		02/21	
01/11		02/22	
01/14		02/25	Exam 2
01/15		02/26	
01/16		02/27	
01/17		02/28	
01/18		02/29	
01/21	<b>Holiday: Martin Luther King</b>	03/03	
01/22	Exam 1	03/04	
01/23		03/05	
01/24		03/06	
01/25		03/07	Last day of classes
01/28		03/10	Prof. Dev./ Student Study Day
01/29		03/11	
01/30		03/12	
01/31		03/13	
02/01		03/14	Final Exam (12:00-2:00 pm)
02/04			
02/05			
02/06			
02/07			
02/08			