

Course Description

Instructor. Prof. Richard Chang, chang@umbc.edu, 410-455-3093.

Office Hours: Tuesday & Thursday 1-2pm, ITE 326.

Time and Place. Tuesday & Thursday 10:00am – 11:15am, ITE 229.

Textbook. *Discrete Mathematics and Its Applications*, fifth edition, Kenneth H. Rosen, McGraw-Hill, 2003 (ISBN 0-07-242434-6).

Course Web Page. <http://umbc.edu/~chang/cs203>

Prerequisites. The prerequisite for this course is MATH 151 Calculus & Analytic Geometry I or its equivalent. MATH 140 Differential Calculus is an acceptable substitute. There is also a programming corequisite: you should have taken or be currently taking a programming course such as CMSC 201. If you are unsure about the programming corequisite, consult the instructor.

Objectives. This course is a prerequisite for several required courses for computer science and computer engineering majors including: CMPE 212, CMSC 313, CMSC 341 and CMSC 441. It is also a highly recommended course for mathematics majors prior to taking MATH 301 Introduction to Mathematical Analysis. As such the main objectives of this course are: 1) to train the students to read and write mathematical proofs; 2) to develop the students' mathematical problem solving skills; and 3) to familiarize the students with standard concepts in discrete mathematics.

Grading. Final grades will be based upon homework assignments (26% total), quizzes (35% total), the midterm exam (17%) and the final exam (22%). The syllabus lists 13 homework assignments and 5 quizzes. However, if a homework assignment or quiz is canceled and not made up (e.g., because UMBC is closed for snow or some other emergency), the proportion of your grade from homework, quizzes and the final exam will remain the same. That is, homework will still count for 26% of your grade and quizzes 35% of your grade (each homework or quiz will have greater weight).

Your final letter grade is based on the standard formula:

$$0 \leq F < 60, \quad 60 \leq D < 70, \quad 70 \leq C < 80, \quad 80 \leq B < 90, \quad 90 \leq A \leq 100$$

Depending upon the final distribution of grades in the class, there may be a curve in your favor, but under no circumstances will grades be curved downward.

Grades are given for work done *during* the semester; incomplete grades will only be given for medical illness or other such dire circumstances.

Quizzes. There are five in-class quizzes scheduled on Tuesdays 9/26, 10/10, 10/24 and 11/21 and Thursday 12/5. Make every effort to attend — unexcused absences will result in a grade of zero for that quiz. Each quiz will be held during the last 30 minutes of the class period.

Since quizzes account for 35% of your final grade, it is the main evaluative instrument for this class. You should think of the homework as practice for the quizzes and the exams as a second chance to show you have learned the material.

At least half of the credit for each quiz will be from a question that requires you to solve a new problem (i.e., not simply a regurgitation of facts). In order to do well in these quizzes, you must be able to do the types of questions assigned for homework on your own. *If you do not learn from doing your homework, you will not pass the quizzes.*

Exams. An in-class midterm exam is scheduled on Tuesday, November 7. The final exam is scheduled on Tuesday, December 19.

Lecture and Homework Policy. You are expected to attend all lectures. You are responsible for all material covered in the lecture as well as those in the assigned reading. However, this subject cannot be learned simply by listening to the lectures and reading the book. In order to master the material, you need to spend time outside the classroom, to think, to work out the homework and understand the solutions.

Assignments are due at the beginning of lecture. *Late homework will not be accepted — this is to allow for timely grading and discussion of the homework solutions.* Reasonable provisions will be made for students who are delayed by traffic, who are on travel, ... *Late homework will be rejected from students who have obviously been working on homework instead of attending lecture.*

Partial credit will be given for serious attempts on the homework problems. So you should simply turn in whatever you have accomplished by the beginning of class. If you cannot attend lecture when homework is due, for some honorable reason, you must make arrangements to submit your homework directly to the instructor. Do not ask another student to submit your homework for you. This is to reduce the temptation to cheat (see below).

Academic Integrity. You are permitted, *but not encouraged*, to work with other students on the homework problems. Most of the homework assignments are straightforward and should be done independently. This increases the likelihood that you will have mastered the material for the quizzes. The occasional brain teaser is more suitable for collaboration. If you do collaborate with other students, you must acknowledge your collaborators by listing them on the last page of your homework. Also, you must write up your homework *independently*. This means you should only have the textbook and your own notes in front of you when you write up your homework — not your friend's notes, your friend's homework or other reference material.

You should not have a copy of someone else's homework *under any circumstance*. For example, you should not let someone turn in your homework. Cases of academic dishonesty will be dealt with severely. At the very least, *students who submit copied homework assignments will receive a grade of 0 for that assignment — this applies both to the person who copied the homework and to the person who allowed the his/her homework to be copied.*

The UMBC academic integrity policy is available at

<http://www.umbc.edu/integrity/students.html>.

We will follow the textbook *Discrete Mathematics and Its Applications* (fifth edition) by Kenneth H. Rosen. The following schedule outlines the material to be covered during the semester and specifies the corresponding sections in the textbook. The topic schedule is approximate and is subject to change.

Date	Topic	Quiz	Reading	Homework	
				Assigned	Due
Thu 08/31	Introduction		1.1-1.2	HW1	
Tue 09/05	Logic Notation		1.3-1.4		
Thu 09/07	Boolean Algebra & Logic Gates		10.1-10.3	HW2	HW1
Tue 09/12	Methods of Proof		1.5		
Thu 09/14	Methods of Proof			HW3	HW2
Tue 09/19	Sets and Functions		1.6-1.8		
Thu 09/21	Alternating Quantifiers: Big-Oh		2.1-2.3	HW4	HW3
Tue 09/26	Proof by Induction	Quiz 1	3.3		
Thu 09/28	Proof by Induction		3.4	HW5	HW4
Tue 10/03	Proof by Induction		3.5		
Thu 10/05	Proof by Induction		3.6	HW6	HW5
Tue 10/10	Graph Theory	Quiz 2	8.1-8.2		
Thu 10/12	Graph Theory		8.3	HW7	HW6
Tue 10/17	Graph Theory		8.4-8.5		
Thu 10/19	Graph Theory		8.7-8.8	HW8	HW7
Tue 10/24	Counting	Quiz 3	4.1-4.3		
Thu 10/26	Counting		4.4	HW9	HW8
Tue 10/31	Counting		4.5		
Thu 11/02	Discrete Probability		5.1		HW9
Tue 11/07	Midterm Exam				
Thu 11/09	Discrete Probability		5.2	HW10	
Tue 11/14	Discrete Probability		5.3		
Thu 11/16	Relations		7.1-7.5	HW11	HW10
Tue 11/21	Relations	Quiz 4	7.6		
Thu 11/23	<i>Thanksgiving Break</i>				
Tue 11/28	Number Theory		2.4	HW12	HW11
Thu 11/30	Number Theory		2.5		
Tue 12/05	Number Theory		2.6	HW13	HW12
Thu 12/07	TBA	Quiz 5			
Tue 12/12	TBA				HW13
Tue 12/19	Final Exam 10:30am – 12:30pm				