

## Discrete Structures - Spring 2001

COURSE: MATH 2710-001

CALL # 11998

TIME: 2:15-3:35 TR

PLACE: Room 313 of Gilbreath Hall

INSTRUCTOR: Dr. Robert Gardner

OFFICES: Room 308G of Gilbreath Hall and 201 of Brown Hall

OFFICE HOURS: 10:15-11:15 MWF

PHONE: 439-6977 (308G), 439-8684 (201) (Math Office 439-4349)

TEXT: *Discrete Mathematics and Its Applications*, 4th edition, by Kenneth Rosen.

PREREQUISITE: An understanding of differential calculus commensurate with Technical Calculus 1 (MATH 1060) or Calculus 1 (MATH 1110).

ADDITIONAL RESOURCES: *Student Solutions Guide* by K. Rosen contains worked-out solutions for all odd-numbered problems in the book. A copy of this resource will be on reserve in the library. After each test, a copy of the solutions will be posted outside of my office door and put on reserve in the library. Finally, the companion website for the text is

<http://www.mhhe.com/rosen>

COURSE OBJECTIVES: This course is designed to introduce students to some of the techniques needed to deal with discrete models (in contrast to the continuous models encountered in calculus). As a consequence, we will cover the "core sections" of the text. This course is also to serve as an introduction-to-proof course for students who plan to take more advanced math courses which demand more rigor, and to provide students studying computer science with the mathematical foundations they need. We will also see examples of algorithmic thinking and introduce algorithmic analysis and computational complexity. Since our emphasis will be on concepts, the use of calculators will not be allowed on tests.

GRADING: Your grade will be determined by the average on four tests ( $T_1$  through  $T_4$ ). Your average is determined by

$$AVERAGE = \frac{T_1 + T_2 + T_3 + T_4}{4}$$

Grades will be assigned based on a 10 point scale with "plus" and "minus" grades being assigned as appropriate.

## Important Dates

Monday, February 5 = Last day to drop without grade of "W".

Thursday, February 8 = Test 1 on 1.1-1.8

Monday, March 5 = **LAST DAY TO DROP.**

Thursday, March 8 = Test 2 on 2.1-2.3, 2.6, 3.1-3.3

Monday, March 12 - Friday, March 17 = Spring Break (no classes).

Thursday, April 5 = Test 3 on 4.1-4.4, 5.1, 5.5

Wednesday, April 25 = Last day to withdraw.

Tuesday, May 1 = Test 4 on 6.1, 6.3, 6.5, 7.1-7.5, 8.1 at 10:30 a.m. to 12:30 p.m.

For other important dates (as well as office hours, library hours, etc.) see:

<http://www.etsu.edu/reg/syllabus.htm> and <http://www.etsu.edu/reg/syllabus.pdf>

## Tentative Outline

We will try to adhere to the following schedule.

DATE	AGENDA	HOMEWORK
TUE 1/9	Intro, 1.1 = Logic	1.1 = 1-42 odd
THR 1/11	1.1 (cont.), 1.2 = Propositional Equivalences	1.2 = 1-41 odd
TUE 1/16	1.3 = Predicates and Quantifiers	1.3 = 1-55 odd
THR 1/18	1.4 = Sets	1.4 = 1-27 odd
TUE 1/23	1.5 = Set Operations	1.5 = 1-51 odd
THR 1/25	1.6 = Functions	1.6 = 1-60 odd
TUE 1/30	1.6 (cont.), 1.7 = Sequences and Summations	1.7 = 1-43 odd
THR 2/1	1.8 = Growth of Functions	1.8 = 1-63 odd
TUE 2/6	Review	
THR 2/8	<b>Test 1</b> (1.1-1.8)	
TUE 2/13	2.1 = Algorithms, 2.2 = Complexity of Algorithms	2.1 = 1-27 odd, 2.2 = 1-21 odd
THR 2/15	2.3 = Integers and Division	2.3 = 1-52 odd
TUE 2/20	2.6 = Matrices	2.6 = 1-37 odd
THR 2/22	3.1 = Methods of Proof	3.1 = 1-68 odd
TUE 2/27	3.1 (cont.), 3.2 = Mathematical Induction	3.2 = 1-69 odd
THR 3/1	3.3 = Recursive Definitions	3.3 = 1-59 odd
TUE 3/6	4.1 = Basics of Counting, Review	4.1 = 1-56 odd
THR 3/8	<b>Test 2</b> (2.1-2.3, 2.6, 3.1-3.3)	
TUE 3/13	Spring Break!	
THR 3/15	Spring Break!	
TUE 3/20	4.2 = Pigeonhole Principle	4.2 = 1-37 odd
THR 3/22	4.3 = Permutations and Combinations	4.3 = 1-63 odd
TUE 3/27	4.4 = Discrete Probability	4.4 = 1-36 odd
THR 3/29	5.1 = Recurrence Relations, 5.5 = Inclusion-Exclusion	5.1 = 1-62 odd, 5.5 = 1-29 odd
TUE 4/3	6.1 = Relations and Their Properties, Review	6.1 = 1-37
THR 4/5	<b>Test 3</b> (4.1-4.4, 5.1, 5.5)	
TUE 4/10	6.3 = Representing Relations	6.3 = 1-19 odd
THR 4/12	6.5 = Equivalence Relations, 7.1 = Introduction to Graphs	6.5 = 1-43 odd, 7.1 = 1-21 odd
TUE 4/17	7.2 = Graph Terminology, 7.3 = Representing Graphs	7.2 = 1-45 odd, 7.3 = 69 odd
THR 4/19	7.3 (cont.), 7.4 = Connectivity	7.4 = 1-38 odd
TUE 4/24	7.5 = Euler and Hamiltonian Paths	7.5 = 1-72 odd
THR 4/26	8.1 = Introduction to Trees, Review	8.1 = 1-40 odd
TUE 5/1	<b>Test 4</b> (6.1, 6.3, 6.5, 7.1-7.5, 8.1)	10:30 a.m. - 12:30 p.m.