

MTH333 Discrete Mathematics

Instructor	Course Dates
Tom Sinclair	05/25/2006 – 07/27/2006

Classroom Hours	Office Hours
T 9:50 AM – 11:45 AM H 10:15 AM – 11:45 AM	W Noon – 4 PM, else by appt.

Course Description
This course is a continuation of MTH331. Topics include set theory, logic, binary arithmetic, proofs, induction, truth tables, and graph theory.

Course Objectives

- Upon completion of this course, students should be able to:
- Use notation for sets, subsets, set operations, power sets, cross products, and cardinality.
 - Demonstrate understanding of set identities and construct simple proofs involving these identities.
 - Use Venn diagrams.
 - Use standard notations of propositional logic and predicate logic.
 - Define and use the terms: proposition, converse, contra positive, tautology, contradiction, predicate, and quantifier.
 - Explain and use standard logical equivalences. Construct simple proofs involving these equivalences.
 - Construct correct direct proofs, and proofs using the principle of mathematical induction.
 - Define and use the division algorithm and the Euclidean algorithm.
 - Perform matrix arithmetic operations, including Boolean operations on zero-one matrices.
 - Find and prove a big-O estimate of growth for a given function.
 - Apply basic counting principles, permutation and combination formulas, the pigeonhole principle, and the inclusion-exclusion principle.
 - Explain and use the binomial theorem and Pascal's triangle.
 - Define and use the terms: vertex, edge, simple graph, multigraph, pseudograph, directed graph (digraph), degree of a vertex, adjacent, incident, complete graph, isomorphic graphs.
 - Draw a graph from its adjacency matrix, and vice-versa.

Course Prerequisites

MTH331 Calculus I

Class Breakdown

CO/IL	
Lecture Hours:	30
Lab Hours:	0
Total Hours:	30

CA	
Lecture Hours:	36
Lab Hours:	0
Total Hours:	36

Credit Hours

CO/IL = 3.0 Credit Hours
 CA = 3.5 Credit Hours

Course Texts and Materials

Discrete Mathematics, Neville Dean, Prentice Hall, 1997
 ISBN 0-13-345943-8

Discrete Mathematics Workbook, James R. Bush, Prentice Hall, 2003
 ISBN 0-13-046327-2

Teaching Strategies

The teaching strategies for this course include facilitated discussion (with visuals as needed), demonstration, class discussion, and hands-on guided practice, including lab work.

Additional materials can also be found on the instructor Web site:
<http://homepage.mac.com/tsinclair>

Grading

Attendance	10%
Midterm	25%
Quizzes	15%
Final Exam	25%
Class Participation, Labs, Special Projects, etc.	25%

At the end of each course, each student is assigned a final grade as follows:

Grade	Quality Points	Point Range	Interpretation
A	4.0	93-100	Excellent
A-	3.7	90-92	
B+	3.3	87-89	
B	3.0	83-86	Above average

B-	2.7	80-82	
C+	2.3	77-79	
C	2.0	73-76	Average
C-	1.7	70-72	
D+	1.3	66-69	
D	1.0	60-65	Below average
F	0.0	59 & below	Failure
I	0.0		Incomplete

Course Completion Requirements

Students must achieve a passing grade of D or above by completing all required examinations, submitting all required lab exercises and projects, and meeting the standards of the school attendance policy.

There are a total of 30 contact hours in this course. If you miss more than 10% (3 hours), you will receive a written warning. If you miss more than 20% (6 hours) you will be dropped from the course unless you have made arrangements with the instructor to make up the time. The decision to allow make-up work is up to the individual instructor.

Classroom Policies

Attendance taking and grading will be accomplished in accordance with current catalog.

Course Topics

Set Theory

Logic

Binary Theory

Binary Arithmetic

Proofs

Induction

Truth Tables

Graph Theory

The above course guide may be changed at the discretion of the instructor to fit the needs of the class. In addition, students will also be responsible for the content of any supplemental materials provided by the instructor unless otherwise stated.

I, _____, have received and read the course syllabus and understand those policies outlined in it.

signature