

**WEBSTER UNIVERSITY**

**COURSE SYLLABUS**

**MTHC 5230.01**

**Instructor: Andrea Rothbart**

**DISCRETE MATHEMATICS**

**Term: Spring Semester, 2003**

**Site: 50**

**1. COURSE DESCRIPTION:**

This course is designed for secondary school mathematics teachers. Topics include: Boolean Algebra and Circuit Design, Finite State Machines, Graph Theory, Trees, Recursion, and Algorithm Design.

**2. LEARNING OUTCOMES: (Goals, objectives, course outcomes, etc.)**

Students will be introduced to a variety of charming elementary applications of mathematics, many of which are appropriate for use with secondary school students.

**3. SCHEDULE (Note: Each class, there will be homework assignments related to the material covered.)**

<b>Week 1</b>	<b>Binary Arithmetic; One's Complement; A bit of Magic</b>
<b>Week 2</b>	<b>Finite State Machines</b>
<b>Weeks 3 – 5</b>	<b>Graph Theory, Chromatic Number and Other Applications; Instant Insanity</b>
<b>Week 6</b>	<b>Quiz; Recursion</b>
<b>Week 7</b>	<b>Matrices and Path Problems</b>
<b>Week 8</b>	<b>Algorithm Design; Shortest Distance Algorithm</b>

**MTHC 5230 Discrete Math (continued)**

<b>Weeks 9 – 11</b>	<b>Trees; Applications of Trees including Polish Notation, Huffman Codes and Binary Search Trees</b>
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<b>Week 12</b>	<b>Quiz; Cryptography</b>
<b>Weeks 13 – 15</b>	<b>Boolean Algebra; Simplifying Boolean Expressions and Solving Equations; Circuit Design; Applications</b>
<b>Week 16</b>	<b>Quiz</b>

**4. RESOURCES:**

Text Used: No textbook need be purchased. Materials will be distributed by the instructor.

**5. EVALUATION:** based upon examinations, homework and class participation.

**This syllabus is subject to change at the discretion of the instructor.  
Therefore, regular attendance is required.**

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## COURSE SYLLABUS

**MTHC 5230.01**

**Instructor: Andrea Rothbart**

**DISCRETE MATHEMATICS**

**Term: FA I, II '96**

**Site: 50**

**1. COURSE DESCRIPTION: (Student focus, rationale, scope, prerequisites)**

This course is for secondary school mathematics teachers who wish to learn some of the areas of mathematics relevant to computer science. Topics include: Boolean Algebra and Circuit Design, Finite State Machines, Graph Theory, Trees, and Algorithm Design.

**2. LEARNING OUTCOMES: (Goals, objectives, course outcomes, etc.)**

The student will experience the power of mathematics in its application to computer science, and will have a broader perspective of algebra.

**3. SCHEDULE OF REQUIRED READINGS, CLASS PREPARATIONS AND ASSIGNMENTS, LECTURES, DISCUSSIONS, STUDENT PRESENTATIONS, AND EXAMS:**

<b>WEEK 1-3:</b>	Graph Theory
<b>WEEK 4-6:</b>	Trees
<b>WEEK 7-9:</b>	Boolean Algebra
<b>WEEK 10-12:</b>	Finite State Automata
<b>WEEK 12:</b>	<b>QUIZ</b>
<b>WEEK 13-15:</b>	Algorithm Design
<b>WEEK 16:</b>	<b>QUIZ</b>

**4. RESOURCES:**

Text Used: Discrete Mathematics: by Johnsonbaugh

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**5. EVALUATION:**

- a) Term Paper
- b) Examinations X
- c) Class participation X
- d) Class presentation
- e) Other--Problems and Exercises

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Therefore, regular attendance is required.**