

Instructor: Jeffrey Horn, email: [jhorn@nmu.edu](mailto:jhorn@nmu.edu)  
office: 1119 New Science Building  
phone: 227-1607

Office Hours: Thursdays 1:00-3:00pm and Fridays 12:00-3:00pm, and 5:00-6:00pm are OPEN OFFICE HOURS, no appt. necessary

I also have hours available BY APPOINTMENT ONLY (email me! and wait for my response!):

Tuesdays	Thursdays	Fridays
12:00-2:00pm	11:00-1:00pm	11:00-12:00pm

Textbook: *Discrete Mathematics and Its Applications (5th ed.)*, by Ken. H. Rosen

Classroom: New Science Facility (NSF) 1209

Meeting Times: 4:00pm M, W, F

Prerequisites: CS 120 (or equivalent programming experience)

Our web page: <http://cs.nmu.edu/~jeffhorn/Classes/MA240/Fall2004>

**(I will use the web page EXTENSIVELY, posting everything I can up there as soon as possible. This includes all electronic forms of handouts, assignments, solutions, sample tests, etc. Also I will post announcements, links to interesting, topic-related sites, etc. So please check our page regularly! At the very least, once a week. Also, our textbook has an associated web page which we will also use extensively, at <http://www.mhhe.com/rosen>. I will link to appropriate pages from ours, but I suggest you browse it on your own too! I will also use your nmu email address for notices, and our class WebCT page for grade posting.)**

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## OBJECTIVES:

Learn, and become comfortable with, the range of discrete mathematical structures that are fundamental to the further study and application of computation. Acquire the conceptual tools for modeling real-world situations as abstract problems amenable to computational solution.

## TOPICS: (tentative)

LOGIC (propositional, proof by induction)

### BOOLEAN ALGEBRA

propositional calculus  
switching (combinational) circuits  
minimization/cannonical forms

### RELATIONS and FUNCTIONS

equivalence relations, partial orders

### COMBINATORICS

permutations  
combinations  
orderings (full, partial)

## GRAPH THEORY

trees, directed graphs, lattices  
cycles, circuits, tours, cut sets, etc.

## GRAPH ALGORITHMS

shortest paths, spanning trees,  
network flow optimization

## COMPLEXITY ANALYSIS

order notation,  $O(n)$ , etc.

## COMPUTATION MODELS

finite state machines (automata, Mealy/Moore machines)  
push-down automata

## RECURRENCE RELATIONS

modeling with

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## GRADING:

50% Homeworks. Drop the lowest TWO homework grades (only if  $>7$  HWs; otherwise drop lowest ONE hw grade)  
20% Quizzes. Drop the lowest (ONE) grade, if  $> 4$  quizzes.  
10% Midterm exam, comprehensive.  
10% Final exam, comprehensive.  
10% Instructor's discretion.

**Late Policy:** For homeworks, 5% off for each day late (counting only days that the university is open; e.g., **not** weekends or snowdays). But of course I cannot accept them after solutions are handed out! As for exams, those cannot be made up except under the most severe and extenuating emergencies! Don't take a chance if you don't have to!

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## COMPUTING FACILITIES:

We might use Maple or some other package for symbolic manipulation and graphing of numerical results. No software purchases will be necessary.

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**NOTE:** *If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Disability Services Office at 2001 C. B. Hedgcock (227-1700; TTY 227-1543). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state and University guidelines.*