Instructor: Antonio Miranda
Hill 363
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Office hours: Tuesday 12pm - 1pm
Thursday 11am - 12pm

Topics: Basic set notation, propositional logic, truth tables, boolean circuits, first-order logic, predicates, quantifiers, mathematical induction, program correctness, trees, grammars, relations, closure of relations, orders, equivalence relations, functions, finite state machines.

Description: To introduce the student to the mathematical tools of logic and induction, and to the basic definitions and theorems concerning relations, functions, and sets. Later courses in the computer science curriculum build on the mathematical foundations covered here. Particular emphasis is placed on inductive definitions and proofs, with application to problems in computer science.

Text: *Discrtete Mathematics and Its Applications* by Kenneth H. Rosen (custom edition for Rutgers University)

Evaluation:

Assignments	30%
Quizzes	20%
2 Midterm exams	30%
Final exam	20%

Class Policy:

- Attendance. Attendance is required. The instructor assumes that all students have knowledge of every announcement made during class time.
- Grading Errors. The only acceptable way to report grading errors is to attach a page describing the alleged error to the corresponding test, homework or project and submit it to the instructor or TA no later that 7 natural days after the date when the test, homework or project was returned graded. An answer to a grade appeal may not be available until the end of the semester, so make copies of the materials given back for review.
- Assignments. Assignments and projects are due by midnight on the assignment due date. Late assignments will **NOT** be accepted unless you have given me a good reason *before* the due date. Partially completed assignments will receive partial credit.

- Exams. Students will not be excused from exams unless they are ill and have been to the infirmary or have seen a doctor.

Important Dates:

Exam 1	Wednesday February 17
Exam 2	Wednesday March 30

Schedule:

Class	Date	Topic
1	1/20	introduction and propositional logic (1.1)
2	1/25	logic circuits (1.2)
3	1/27	propositional equivalences (1.3)
4	2/1	predicates and quantifiers (1.4)
5	2/3	quantifiers (1.5)
6	2/8	proof methods (1.7)
7	2/10	proof methods (1.8)
8	2/15	problems
9	2/17	Exam 1
10	2/22	mathematical induction (5.1)
11	2/24	mathematical induction (5.2)
12	2/29	program correctness (5.5)
13	3/2	sets (2.1)
14	3/7	set operations (2.2)
15	3/9	relations (9.1)
16	3/21	relation properties (9.2-9.4)
17	3/23	equivalence relations and order (9.5,9.6)
18	3/28	functions (2.3)
19	3/30	Exam 2
20	4/4	set cardinality and infinite sets (2.5)
21	4/6	infinite sets (2.5)
22	4/11	formal languages and grammars (13.1)
23	4/13	deterministic finite automata (13.1)
24	4/18	examples of DFA (13.2)
25	4/20	nondeterministic finite automata (13.3)
25	4/25	equivalnce of DFA and NFA (13.3)
27	4/27	non regular languages and Turing Machines (13.4)
28	5/2	Halting problem, Church Turing Thesis (13.5)

Note: Time allotted to each topic is only a rough estimate.
Adjustments to this schedule will be made as necessary.