

Math 374 (Discrete Structures) Fall 2012

Instructor: Aaron Dutle

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Office: LeConte 418B

Office Hours: MW 2:30-3:30, or by appointment

Prerequisites: Grades of C or better in both CSCE 146 and MATH 142.

Text: Judith L. Gersting, *Mathematical Structures for Computer Science*, Sixth Edition, W. H. Freeman and Company, New York, NY, 2007. www.whfreeman.com/gersting.

Class Meetings: MWF, 1:25-2:15, LC 115. Students are expected to attend this class in accordance with University policy.

Tests: There will be two tests during the semester, and will be scheduled as we progress. Notice of (at least) one week will be given prior to the date of a test. A compulsory and comprehensive final will be held on Wednesday, December 12, at 12:30.

Homework: Solving homework problems is the easiest, best, and perhaps only way to properly prepare for tests and quizzes. Homework will be assigned and collected regularly, and selected problems from each set will be graded for correctness. Solutions are due by the end of class on the deadline date assigned, or can be left at my office *earlier*. Late homework will not be accepted or graded. Your best ten homework assignments will be counted toward your grade.

Quizzes: We will have (approximately) weekly quizzes, usually on Monday, which will cover material from the lectures and homework. Your best ten quiz scores will be counted toward your grade.

Make-up Policy: *There will be no make-up homework or quizzes for any reason.* If you must miss class for a legitimate reason, contact me prior to the class and we may be able to schedule a time *before* the date in question. If you miss a test with a legitimate reason, 80% of your score on the final can replace the missed test.

Grading Scheme: Each test will be worth 25 points, the final will be worth 30 points, homework will be worth 10 points, and quizzes will be worth 10 points. The following scores will guarantee the following grades. I reserve the right to shift the scale at the end of the semester. All curving (if any) will occur at the end of the semester.

<i>A</i>	: 92 – 100
<i>B+</i>	: 87 – 91
<i>B</i>	: 82 – 86
<i>C+</i>	: 77 – 81
<i>C</i>	: 72 – 76
<i>D+</i>	: 67 – 71
<i>D</i>	: 60 – 66
<i>F</i>	: 0 – 59

Course Website: www.math.sc.edu/~dutle/math374.html will list the material covered, the assigned homework, test dates, and any supplemental material.

Course Content: We will cover as much as time permits of the following topics: propositional and predicate logic; proof techniques; recursion and recurrence relations; sets and combinatorics; functions, relations and matrices, graphs and trees. Logic, proof techniques, and recursion provide the mathematical foundation for both writing a program and demonstrating its correctness. Sets, combinatorics, functions, relations, and matrices comprise the most basic objects and relationships that are used in computer science. Graphs and trees can be used as models of many real world phenomena, while also being amenable to computer programming.

Learning Outcomes: Students are expected to translate English sentences into predicates and vice versa. They will be able to evaluate truth values and verify tautologies using methods of logic and will be familiar with the principles of declarative programming languages.

Students will be able to write recursive algorithms, prove the correctness of simple algorithms, solve simple recurrences, and use mathematical induction, in particular, to show the correctness of loops.

Students will be able to use the concepts of relations, graphs and matrices to model real-life situations and to operate within the models they created.

Students are, of course, expected to read the text after class. However, reading the next section *before* class is also expected. This will help the students in seeing the outline of the current topic, giving familiarity with the basic concepts, and help in seeing the fine points of the lecture.

Academic Honesty: Cheating will not be tolerated in this course. Violations of this policy will be dealt with in a manner consistent with University regulations, which range from a warning to expulsion from the University.

Electronics policy: Please silence and refrain from using all electronic devices (phones, ipods, microwave ovens, etc.) during class and exam periods.

Some Important Dates:

August 29, Wed. - Last day to drop/add without a grade of "W" being recorded

September 3, Mon. - Labor Day Holiday - no classes

September 13, Thurs. - Last day to apply for December graduation

October 11, Thurs. - Last day to drop without a grade of "WF" being recorded

October 18-19, Thurs.-Fri. - Fall break-no classes

November 6, Tues. - General Election Day - no classes

November 21 - 25, Wed.-Sun. - Thanksgiving recess - no classes

December 7, Fri. - Last day of classes

December 8, Sat. - Reading day

December 12, Wed. - Final exam at 12:30, in LeConte 115