Math 374 - Discrete Structures
Spring 2014

Instructor: Aaron Dutle, dutle@math.sc.edu, LeConte 418B

Class Meetings: MWF, 10:50 - 11:40, Close/Hipp 435.

Office Hours: MW 12:00-1:00, or by appointment

Website: www.math.sc.edu/~dutle/math374_s14

Text: Judith L. Gersting *Mathematical Structures for Computer Science, sixth edition*, published by Freeman. A website made by the publisher is available at www.whfreeman.com/gersting.

Course Material: 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 will be able to translate English sentences into predicates and vice versa. They will be able to evaluate formal arguments, and be able to formally prove valid statements. 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 create.

Grading: The grade in this course will be based four tests (worth 15% each), a final exam (30%), and homework (10%). Course grades will be determined according to the following scale:

A: 90-100, B+: 85-89, B: 80-84, C+: 75-79, C: 70-74, D+:65-69 D: 60-65, F: 0-59.

Homework: Solving homework problems is the easiest, best, and perhaps only way to properly learn the material and prepare for tests. Homework will be assigned and collected regularly, and marked for completion. Each will be given 0-3 points. 3 points will be given if all problems are reasonably attempted, 2 points given for more than half attempted, 1 point for more than one problem attempted, and zero otherwise. Submitted homework will also **require** a properly filled out cover sheet, available on the class website, to be accepted. 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.

Tests: There will be four tests, one corresponding to each of the first four chapters of the text. The (tentative) dates for the four tests are

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Test 1: Wednesday, February 5
Test 2: Friday, February 28
Test 3: Monday, March 31
Test 4: Wednesday, April 23

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There will be no make-up tests. If you know you are going to miss a test for a legitimate reason, contact me *before* the test to make arrangements. In any other situation, 80% of your Final exam score can be used to replace up to two of your test grades.

Final Exam: The final exam will be cumulative. It will be held on Monday, May 5, at 9:00 am, in Close/Hipp 435.

Attendance: Class attendance and participation is expected. If you know you will miss a lecture, please make arrangements with another student to catch up on the material missed. By University policy, you may miss up to 10% of class meetings (4 classes, excused or unexcused) with no penalty. If more than 10% of class meetings are missed, the instructor reserves the right to lower the final grade by a half-letter grade for every class meeting missed above the 10% cutoff. It is impolite and disruptive to leave class early unless you have notified me of this before class starts.

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: Please silence and refrain from using all electronic devices during class and exam periods.

Some Important Dates:

January 17, Friday:	Last day to drop/add
January 20, Monday:	Dr. Martin Luther King, Jr. Service Day – no classes
February 3, Monday:	Last day to apply for May graduation
March 3, Monday:	Last day to withdraw with a grade of 'W'
March 9–16, Sun-Sun:	Spring Break – no classes
April 28, Monday:	Last day of classes
May 5, Monday:	Final Exam, 9am