

Math 570 - Discrete Optimization Fall 2013

Instructor: Aaron Dutle, dutle@mailbox.sc.edu, LC 418B

Class Meetings: TTh, 11:40 - 12:55, LC 303B.

Office Hours: MW 1:00-2:00, or by appointment

Website: www.math.sc.edu/~dutle/math570

Text: Glenn Hurlbert, *Linear Optimization: The Simplex Workbook*, published by Springer.

Supplemental material will be posted on the website.

Course Material: According to the course catalog, “topics include linear programming, integer programming, network analysis, and dynamic programming.” To be more specific, we’ll cover as much of the following material as is feasible: optimization problems on graphs, including shortest paths, spanning trees, and matchings; linear programming and applications, including the simplex method, duality, geometry, game theory, and combinatorics applications; integer programming, including cutting planes, branch and bound, and applications; P vs. NP, including reductions; and approximation algorithms.

Learning Outcomes: Upon successful completion of this course, students will be able to set up and solve problems involving the material covered, and be able to clearly communicate these solutions to others .

Grading: The grade in this course will be based on homework presentations, a test, and a final exam. The weights of each component are as follows:

Homework:	50%
Test:	25%
Final Exam:	25%

Course grades will be determined according to the following scale:

A: 90-100, B+: 85-89, B: 80-84, C+: 75-79, C: 68-74, D: 60-67, F: 0-59.

Homework Presentations: Accompanying each lecture will be a collection of problems (posted on the course website). These will range over parts of proofs not covered in the class, extensions of techniques covered, problems related to the material, and applications. Students are expected to complete as many as they can. Some of these problems will be selected to have a solution presented to the class. As you solve these problems, please let me know that you are prepared to present them. On the day chosen for the problem, I will select (in a somewhat random manner) a student to present a solution. If there are no issues with the solution found by the other students or the instructor, the student will receive full credit for the solution. Otherwise, some partial credit may be given, and another student will be asked to present.

Based on an estimate of 4 problems per week, you should expect to present approximately 4 *good* solutions. If the number of problems increases drastically, the number of solutions per student will rise accordingly. *Note:* There will not be enough problems or time for everyone to do 4 presentations in the last weeks of the semester. You *must* take part during the entire course to fulfill this requirement.

Test: The date for the test will somewhat near the middle of the semester. *Very* tentatively, the date will be Oct 8.

Final Exam: The final exam will be cumulative. It will be held on Thursday, Dec 12, at 9:00 am, in LC 303B.

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 (3 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.

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

Some Important Dates:

August 28, Wednesday - Last day to drop/add

September 2, Monday - Labor Day, no classes

September 12, Thursday - Last day to apply for December graduation

October 11, Friday - Last day to withdraw with a grade of 'W'

October 17-18, Thursday -Friday - Fall Break, no classes

November 21-December 1, Wednesday-Sunday - Thanksgiving Break, no classes

December 6, Friday - Last day of classes

December 12, Thursday - Final Exam