Course Outline
Math 428/828, Spring 2010/11

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Office Hours: Monday, Wednesday 2:30-3:20, Thursday 3:30-4:20, and by appointment.

ACE Outcome: Math 428 satisfies ACE outcome 10: Generate a creative or scholarly product that requires broad knowledge, appropriate technical proficiency, information collection, synthesis, interpretation, presentation and reflection.

Course Outline: We should try to cover these topics:

- Formulation of linear programming problems. (Sections 3.1, 3.2, 3.4, 3.5.)
- Solution of linear programming problems by the simplex method. (Sections 4.1-4.7.)
- The theory of the simplex method. (Sections 5.2, 5.3.)
- Duality and sensitivity analysis for the simplex method. (Sections 6.1-6.8.)
- Dynamic programming. (Sections 10.1-10.4.)
- Decision theory. (Sections 15.1-15.4.)
- Queueing theory. (Sections 17.1-17.6.)

In the unlikely event that we have time left over, we could also take a look at one of these:

- Integer programming. (Sections 11.1-1.4.)
- Game theory. (Sections 14.1-14.5.)
- Markov processes. (Sections 16.1-16.8.)
- Simulation. (Sections 20.1-20.6.)

Background: You’ll need calculus, linear algebra and basic probability. You don’t need programming experience.

Course Log: You can find the course log on Blackboard. If you miss class, you can check the log to find which topics and sections were covered, which problems assigned, etc.

Homework: Homework will be assigned weekly. A well-written solution to a homework problem will earn you up to three points. You’ll get one point for the writing and zero, one or two points for the mathematics. A poorly-written solution earns you one point at most. You get the point if the answer is correct and accompanied by sufficient work.

Exams: We’ll have two 75-minute exams and a two-hour comprehensive final. The probable dates of the exams are February 23 and April 12. The final will be given 1:00-3:00 PM, Monday, May 2. Books and notes are not allowed on exams. You may use a simple scientific calculator on an exam, but not graphing calculators, cell-phone calculators or calculators that support a computer algebra system (e.g. Maple).

Project: There will be a project, possibly broken into up into two parts. You may do the project alone, or in group of no more than three.

Grades: Each 75-minute test will count for 20% of your grade, the final exam 30%, the project and homework 15% each.