Optimization Deterministic Models
ISDS 560 - Spring 2011
Thursday, 7:00 – 9:45 p.m., SGMH2405

Dr. Z. Goldstein

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Office hours: Thursday 6:00 – 7:00 p.m.

Text:
2. Instructor’s notes.

Software: Excel Solver.

Exams – general information:
• Three closed-book non-cumulative exams. Each exam covers one third of the course. There is no final.
• A blue book is required,
• No restrictions on notes.
• Exams are computational and require written detailed solutions. Always show all your work.
• Excel will be used to assist in computational effort and run optimization procedures.
• Exams are graded on a partial credit basis.

Exam dates
• Thursday - Feb. 24, class time, classroom
• Thursday - April 7, class time, classroom
• Thursday - May 17, 7:30 p.m.
**Course Grade:** The grade is determined based on the average exam score.

**Grade chart**
- A: 90 - 100
- B: 75 - 89
- C: 60 - 74
- D: 50 - 59
- F: Below 50

**Homework assignments:**
- Homework assignments will be assigned after each meeting, and discussed at the beginning of the next meeting.
- Assignments are not graded, but should be considered essential for a full grasp of the subject matter, which will (hopefully) result in the successful completion of the course.

**Academic dishonesty - University Policy:** Academic dishonesty, when detected, will result in a lower letter grade for the work at hand, and may result in an "F" for the course, plus additional university level disciplinary action. Please refer to the current university catalog for the official university policy on this subject.

*The main purpose of the degree program at Mihaylo College of Business and Economics (MCBE) at CSU Fullerton is to provide you with the knowledge and skills that prepare you for a successful career in business. In order to assist us in achieving this goal, we will use a number of assessment tools to track your progress throughout the MCBE curriculum. Please expect to participate in MCBE assessment activities in several of your courses while at MCBE. As you do so, you will assist us in identifying our program's strengths and weaknesses as well as areas for potential improvement. In other words, you are making an important investment in the value of your degree.*
Tentative course outline

1. Linear regression - Extensions
   a. Advanced topic
      i. Categorical variables
      ii. Interaction
      iii. Transformations
      iv. Are group of variables significant? The partial F-test
   b. Diagnostics
      i. Normality of the error term
      ii. Hetero-scendasticity of the error term
      iii. Multi-colinearity

2. Forecasting of time series - Extensions
   a. Trended or not? Auto-correlated or not?
   b. Forecasting trend:
      i. Review of linear regression and the Holt’s model
      ii. The double Exponential smoothing
      iii. Non-linear trend models
   c. Auto-regressive models
   d. Seasonal models
      i. The multiple regression with dummy variables
      ii. The Moving Average Filtering approach
      iii. The Holt – Winters model

3. Linear Programming
   a. Special linear programming models
   b. Simplex search -
   c. Duality and sensitivity analysis -

4. Discrete optimization
   a. Integer programming models
   b. The Branch and Bound method

5. Discrete dynamic programming
   a. Multi-stage decision making
   b. The principle of optimality
   c. Examples (Inventory, Investment, Resource allocation)

6. Multi-objective optimization -
   a. Multi-objective models
   b. Goal programming

7. Decision Theory
   a. Basic concepts (Payoff table, Decision Tree)
   b. Decision making and the concept of Utility
   c. Basic concepts in Game Theory (optional)
8. Unconstrained nonlinear programming

9. Constrained nonlinear programming
   a. Models
   b. Lagrange Multipliers
   c. Karush – Kohn – Tucker optimality conditions (14.4)