

**Econ 2326C**  
**Fall 2014**

(Tu-Th 12:30 – 1:45; OAK308)

**Operations Research**

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This course covers topics related to resource allocation decisions in complex organizations (like manufacturing firms, public service agencies, the military, or the civilian government) often consisting of nearly autonomous sub-units with competing (and sometimes conflicting) goals. The main objective is to learn how the decision making problems can be formulated as standard mathematical models that can be solved using relevant data in Excel. It needs to be emphasized that learning how to formulate the appropriate optimization problem is in many ways more important than mastering the mechanics of the Excel Solver.

**Note: Some background in basic algebra (like solving 2 equations in 2 unknowns) is essential for this course. Also, some familiarity with EXCEL is presumed.**

Instruction will include in class lectures and hands on solution of solving exercises in the classroom/ lab. There is no grader or TA assigned for this course yet although I have requested for one. If a TA is assigned, the individual will be available to help students with Excel programming problems during posted office hours. For computer (or other) problems, see me during my office hours. Homework assigned will be for practice and will not count towards your grade. However, practice problems will be handed out from the end-of-chapter problems from the textbook and will prepare the student for problems on exams and quizzes. Solutions to assigned problems will be posted on the course web page on Husky CT.

The required textbook for this course is

Ragsdale: *Spreadsheet Modeling and Decision Analysis* (7<sup>th</sup> Ed)

There will be three in class quizzes. There will not be any make up midterm or quiz (except for documented medical problems). No accommodations can be made for travel plans already made. Students are encouraged to make use of my office hours. *Please do not try to use e-mails as substitute for office hours.*

Overall evaluation for the course will be based on the following with weights as shown:

**Midterm: 30% (Oct 9, 2014)**

**Final: 50% (as per Final Exam schedule)**

**Quizzes: 20%**

Cheating or other academic misconduct will be handled as per standard university policy.

| <b>Tentative Schedule of Topics</b>  |         |                                     |              |
|--------------------------------------|---------|-------------------------------------|--------------|
| <b>Econ 2326 Operations Research</b> |         |                                     |              |
| Date                                 | Meeting | Topic                               | Book Chapter |
| 26-Aug                               | 1       | Linear Programming for Optimization | Ch 2         |
| 28-Aug                               | 2       | Graphical Solution of LP Problems   | Ch 2         |
| 2-Sep                                | 3       | Excel Spreadsheets: Basic           |              |
|                                      |         | Excel Spreadsheets: Advanced        |              |
| 4-Sep                                | 4       | <b>Quiz 1</b>                       | Ch 2         |
|                                      |         | Solving LP Problems on Spreadsheets | Ch 3         |
|                                      |         | Hot Tubs Problem                    | Ch 3         |
| 9-Sep                                | 5       | Make Vs Buy                         | Ch 3         |
|                                      |         | Workout Practice Problems           | Ch 3         |
| 11-Sep                               | 6       | Investment Problem                  | Ch 3         |
|                                      |         | Workout Practice Problems           | Ch 3         |
| 16-Sep                               | 7       | Transportation Problem              | Ch 3         |
|                                      |         | Workout Practice Problems           | Ch 3         |
| 18-Sep                               | 8       | <b>Quiz 2</b>                       |              |
|                                      |         | Blending Problem                    | Ch 3         |
| 23-Sep                               | 9       | Production and Inventory Problem    | Ch 3         |
| 25-Sep                               | 10      | Multi-period Cash Flow Problem      | Ch 3         |
| 30-Sep                               | 11      | Data Envelopment Analysis           | Ch 3         |
| 2-Oct                                | 12      | Sensitivity Analysis                | Ch 4         |
|                                      |         | Shadow Prices                       | Ch 4         |
| 7-Oct                                | 13      | Basic Feasible Solutions            | Ch 4         |
|                                      |         | Simplex Method                      | Ch 4         |
| 9-Oct                                | 14      | <b>Midterm</b>                      |              |
| 14-Oct                               | 15      | Review of the Midterm Exam          |              |
| 16-Oct                               | 16      | Network Models                      | Ch 5         |
|                                      |         | Transshipment Problem               | Ch 5         |
| 21-Oct                               | 17      | Shortest Path Problem               | Ch 5         |
|                                      |         | Recycling Problem                   | Ch 5         |
| 23-Oct                               | 18      | Maximal Flow Problem                | Ch 5         |
| 28-Oct                               | 19      | <b>Quiz 3</b>                       |              |
|                                      |         | Integer Programming Problems        | Ch 6         |
| 30-Oct                               | 20      | Employee Scheduling Problem         | Ch 6         |
| 4-Nov                                | 21      | Capital Budgeting Problem           | Ch 6         |
| 6-Nov                                | 22      | Fixed Charge Problem                | Ch 6         |
| 11-Nov                               | 23      | Contract Award Problem              | Ch 6         |
| 13-Nov                               | 24      | Goal Programming                    | Ch 7         |
| 18-Nov                               | 25      | Workout Practice Problems           | Ch 7         |
| 20-Nov                               | 26      | Multiple Objective LP Problem       | Ch 7         |
| 2-Dec                                | 27      | Workout Practice Problems           | Ch 7         |
| 4-Dec                                | 28      | Review for the Final Exam           |              |