SIE 340: Deterministic Operations Research

Fall 2014

Course Description: (3 units) Linear programming models, solution techniques, sensitivity analysis and duality. The objective of SIE 340 is the development of a working knowledge of deterministic operations research techniques, primarily linear programming. Students are able to develop an appropriate linear programming model from a verbal description of a problem, choose an appropriate solution technique and extract relevant information from the model and solution.


Time and Location: MoWeFr 2:00pm-2:50pm, Modern Languages, Rm 311

Instructor: Dr. Neng Fan
Office: ENGR 312
Office Hours: MoWe 3:00pm-4:00pm
Email: nfan@email.arizona.edu

Teaching Assistants:
Ms. Shanshan Hou
Office: ENGR258A
Office Hours: MoWe 12:00pm-1:30pm
Email: shanshanh@email.arizona.edu

Course Website: We'll be using D2L. All class materials, including HW, lecture notes, supplemental readings, etc, will be distributed from D2L. You must check the announcements in D2L at least once per day.


References:
Course Outline:

1. Introduction to mathematical modeling
2. Review of linear algebra
3. Solving linear programming problems
   - Graphical solutions of LP problems
   - Simplex algorithm
4. Sensitivity analysis and duality
5. Special LP Structures: Transportation, Assignment, and Network Flow Problems
6. Introduction to Integer/Nonlinear Programming (time permitting)

Course Policies:

Homework: 8 sets, 20%
Quiz: 5 times, 10%
Exams: Midterm exam 1 (15%), Midterm exam 2 (15%), Final exam (25%)
Class project: 15%

Final Grade: A: 90-100; B: 80-89.9; C: 70-79.9; D: 60-69.9; E: ≤59.9

Note on Academic Integrity: I expect you to understand and write your own solutions. Also, if you have any references, you must cite them.

Late problem sets will not be accepted. Any questions with grades for HW and exam, you should write explanation to TAs within one week of grades posted.

Teams (1-3 students) can be formed for the final project. Each team submits a one-page progress report and one final project with at least 10 pages. The objective of the final project is to apply optimization techniques and LP software to study a research topic selected by a team.

Additional Administrative Notes: If you have a disability or a special need for which you are or may be requesting accommodations, please contact both me and the S.A.L.T. Center (http://www.salt.arizona.edu/) or the Disability Resource Center (http://drc.arizona.edu/) as early as possible in the semester. You must submit appropriate documentation to the instructor before accommodations can be granted.

You are encouraged to make recommendations to improve the class and my teaching skills.