Mathematics 3331 (2011 fall)

Linear Programming and Applications

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Lectures: MWF: 12:30 - 1:30 PM, **RB 2042**
Office hours: Mondays: 2:00 – 3:00 PM (RB 2007)
Email communication: All the email messages regarding to the course should have the subject: "Math 3331, your name, brief description of your question".

Course Materials:

Text book: Wayne L. Winston, *Operations Research – Applications and Algorithms (4th Edition),* Thomson Brooks/Cole, 2004.

Computer Software:

MS Excel.

Course Content:

Linear programming, simplex method, sensitivity analysis, duality, dual simplex method, integer programming and computer tools for solving linear programming and integer programming. These are covered in Chapters 2 - 4, Chapters 6 and 9.

Assignments:

Weekly assignments will be posted on the course website and are normally due on Mondays. All assignments should be placed in the MATH 3331 assignment box on the second floor of Ryan Building before 12:00 midnight of the due date. In fairness to everyone, late assignments will not be accepted.

Examinations:

A fifty-minute Mid-term is scheduled during the lecture hour on Wednesday, October 19, 2011. A three-hour final examination will be scheduled at the end of the term. All exams are open-booked.

Grading Scheme:

Assignments:	15%
Mid-term:	25%
Final Exam:	60%

Tentative Schedule (Subject to Change):

Week 1 (Sept. 12 – 16):
Sections 2.1 – 2.6: Basic Linear Algebra (Review).

Week 2 (Sept. 19 – 23):
Sections 3.1 – 3.3: Linear Programming Models.
(Assignment 1 dues Sept. 19)

Week 3 (Sept. 26 – 30):
Selected problems from Sections 3.4 – 3.12: Linear Programming Applications.
(Assignment 2 dues Sept. 26)

Week 4 (Oct. 3 – 7):
Sections 4.1 – 4.6: LP Properties and Simplex Method.
(Assignment 3 dues Oct. 3)

Week 5 (Oct. 10 – 14):
Sections 4.7 – 4.13: Simplex Method Alternatives.
(Assignment 4 dues Oct. 10)

Week 6 (Oct. 17 – 21):
Sections 4.14 – 4.17: Other Methods to Solve LP's.
(Midterm Exam is on Wednesday, Oct. 19.)

Week 7 (Oct. 24 – 28):
Sections 6.1 – 6.4: Sensitivity Analysis
(Assignment 5 dues Oct. 24)

Week 8 (Oct. 31 – Nov. 4):
Sections 6.5 – 6.7: LP Duality.
(Assignment 6 dues Oct. 31)

Week 9 (Nov. 7 – Nov. 11):
Sections 6.8 – 6.12: Dual Simplex Method.
(Assignment 7 dues Nov. 7)

Week 10 (Nov. 14 – Nov. 18):
Using EXCEL to solve LP's
(Assignment 8 dues Nov. 14)

Week 11 (Nov. 21 – Nov. 25):
Sections 9.1 – 9.2: Integer Programming Introduction.
(Assignment 9 dues Nov. 21)

Week 12 (Nov. 28 – Dec. 2):
Sections 9.3 – 9.8: Selected Methods to Solve ILP's.
(Assignment 10 dues Nov. 28)