DETERMINISTIC OPERATIONS RESEARCH MODELS

MATH/CSCI 4300/8306

Course Description:

This is a survey course of deterministic operations research models and algorithms. Topics include linear programming, network programming, and integer programming. **3 credits**

Prerequisites:

MATH 2050 with a C- or better or permission of instructor.

Anticipated audience/demand:

Students in Mathematics, Computer Science, ISQA, and Engineering.

Major Topics:

1. Linear Programming
- a. Applications
- b. Geometric properties
- c. Standard form
- d. Simplex method
- e. Initial basic feasible solution
- f. Computer solution methods
- g. Sensitivity analysis
- h. Duality

2. Network Flow Programming
- a. Transportation problem
- b. Assignment problem
- c. Minimum cost network flow problem
- d. Shortest path problem
- e. Maximum flow problem

3. Integer Programming
- a. Applications
- b. Greedy Algorithms
- c. Branch and Bound

Methods:

This course will be presented by lecture and class discussions.

Student Role:

Students must participate in class and complete course requirements.

Textbook:

Rader, David J. *Deterministic Operations Research*, *1st ed*. Hoboken: John Wiley & Sons, Inc., 2010.

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