

IE 517

HEURISTIC METHODS IN OPTIMIZATION

Fall 2008

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Lecture Hrs: Wednesday 10:00-11:00, Friday 09:00-11:00

Office Hrs: Wednesday 11:00-13:00, Friday 11:00-13:00

Web Site: www.ie.boun.edu.tr/~aras

Textbook: There is no textbook, but the following book is a very good reference:

Handbook of Metaheuristics, Edited by Glover and Kochenberger, Kluwer Academic Publishers, 2003 (will be available on reserve)

Objectives of the Course:

Although most discrete optimization research is based on exact solution of integer or combinatorial problems, there are numerous applications which use some form of a heuristic. Heuristics are methods that seek a good, but not necessarily optimal solution in a reasonable amount of time. This course will survey a wide range of heuristic methods, emphasizing their generic characteristics and limitations, and the types of problems to which they are best adapted.

Evaluation:

Assignments (4): 25%

Project :30%

Exam: 30%

Participation: 15%

Topics Covered:

1. Introduction
2. Classical Construction Heuristics
3. Classical Improvement Heuristics
4. Lagrangean Relaxation and Lagrangean Heuristics for IP/MIP problems
5. Simulated Annealing
6. Noising Methods
6. Variable Neighborhood Search
7. Tabu Search
8. Genetic Algorithms
9. Ant colony optimization