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Prof. Rosenberg

Ungar 523, x–2575

Office hours: TBA.

MTH 540–T (Spring 94)

Time: Tu., Th. 5:00–6:15 P.M.

Room: MM 104

- **Overview:**

  This is a course on combinatorial optimization. The most successful and universally applied method of optimization is linear programming. We shall spend a large part of the course on the simplex method, a technique for solving linear programs.

  Network flows will be covered in the context of the network simplex method. Network flow is an optimization problem linked to the efficient movement of commodities and to shortest route problems.

  Finally, we will explore these other optimization approaches: integer programming, dynamic programming and heuristics.

- **Prerequisites:**

  The stated prerequisite is Math 517, this prerequisite can be waived for graduate students enrolled in this course. There will be a review of linear algebra, but previous exposure to vectors and matrices would be helpful.

- **Text:**

  There are two required texts:

  1. *Linear Programming* by Vašek Chvátal,
  2. *Combinatorial Optimization for Undergraduates* by L. R. Foulds.

  We will use the first text for linear programming and network flows. The second text will be referenced for integer programming, dynamic programming and heuristics.

  A third text is available, it is very difficult and its price is very high. When I ordered this book, I was not aware of its price. It is a book only for specialists.

- **Homework:**

  Homeworks will be assigned at two week intervals and will make up 40% of your grade.

- **Tests:**

  There will be three tests, reflecting the three major topics of the course: (1) the simplex method, (2) network flows, and (3) other optimization approaches. Each will be worth 20% of your grade. I would like to have the third test on the last day of class, rather than in the finals period.