

OFFICIAL SYLLABUS
OR 587a – Mathematical Programming
Adopted - Spring 2004 (Committee: Drs. M. Agustin, M. Cooper, E. Sewell)

Course Description. Theory, methods, and applications of linear and network programming.
Prerequisite: OR 440; MATH 321

OR 587a Textbook. Linear Programming by Chvatal.

OR 587b Textbook. Network Flows by Ahuja, Magnanti, and Orlin.

Supplementary Textbook. Operations Research: Applications and Algorithms, Third Edition, by Wayne L. Winston.

Course Outline and Topics

Chapter 1: Introduction

Chapter 2: How the Simplex Method Works

Chapter 3: Pitfalls and How to Avoid Them

Chapter 4: How Fast is the Simplex Method?

Chapter 5: The Duality Theorem

Chapter 7: The Revised Simplex Method

Chapter 10: Sensitivity Analysis

Chapter 16: Systems of Linear Inequalities

Chapter 17: Connections with Geometry

Chapter 19: The Network Simplex Method (Optional)

Chapter 20: Applications of the Network Simplex Method (Optional)

Chapter 22: Maximum Flows Through Networks (Optional)

Chapter 2 (Network Flows): Shortest Paths: Label-Setting Algorithms (Optional)

Chapter 6 (Network Flows): Maximum Flows: Basic Ideas (Optional)

Chapter 7 (Network Flows): Maximum Flows: Polynomial Algorithms (Optional)

Chapter 13 (Network Flows): Minimum Spanning Trees (Optional)

Any instructor should cover all of the material specified and several of the optional sections on graphs and networks.