UNIVERSITY OF WISCONSIN-MADISON
COMPUTER SCIENCES DEPARTMENT

COURSE NO.	**COURSE TITLE**	**INSTRUCTOR**
CS 525 (Also IE, MATH, STAT)	Linear Programming	O. L. Mangasarian
3 credits	Lecture 1	Office: Room 6393
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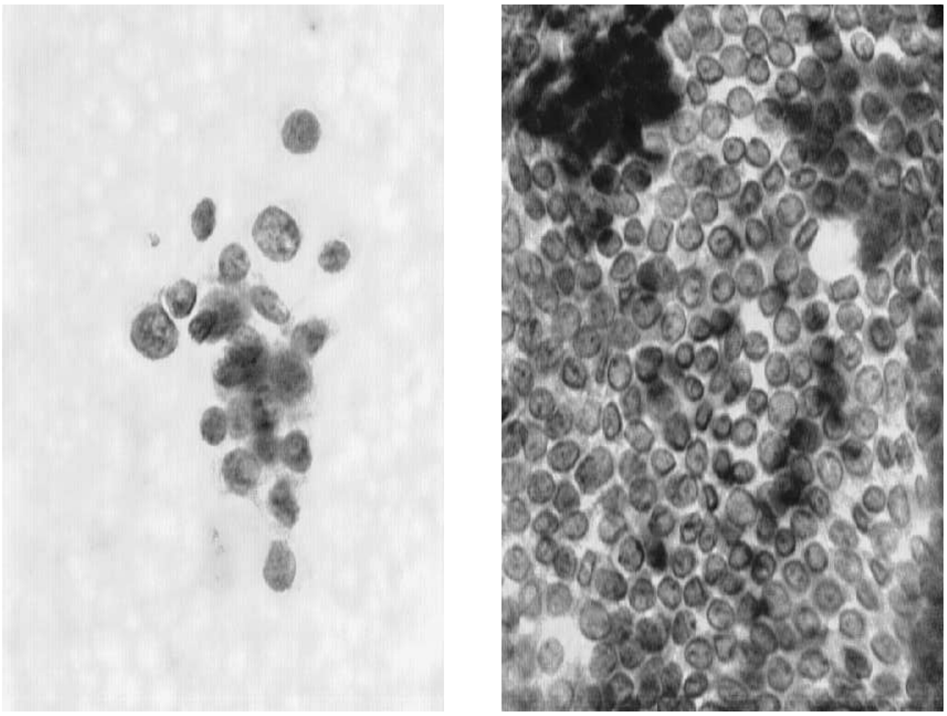

Figure 1: **Course Project:** Separation of nuclei of cells of a malignant fine needle aspirate (left) from a benign aspirate (right), taken from patients' breasts.

COURSE DESCRIPTION

1. Introduction: Problems Leading to Linear Programs
2. Linear Algebra
3. The Simplex Method
4. Duality and Dual Simplex Method
5. Geometry
6. Computational Considerations
7. Interior Point Methods
8. Sensitivity Analysis and Parametric Linear Programming
7. Approximation Problems
8. Linear Complementarity Problems: Quadratic Programming and Bimatrix Games
9. Machine Learning and Data Mining Applications

LECTURES

8:00–9:15 TR, Room 1221 Computer Sciences & Statistics

WRITTEN ASSIGNMENTS AND EXAMS

1 Open-Book Midterm, 1 Open-Book Final
Approximately 1 Assignment per Week
Project: Cancer Diagnosis via a Linear Programming Code with MATLAB

GRADING SYSTEM

Approximately: 30% Homework, 30% Midterm, 10% Project, 30% Final

TEXTBOOK & MATLAB MANUAL

M. C. Ferris & O. L. Mangasarian: "Linear Programming with MATLAB", University of Wisconsin, Madison 2001. Preliminary version will be available from the Department of Information Technology (DoIt).

K. Sigmon: "MATLAB Primer", Third Edition, Department of Mathematics, University of Florida, Gainesville, Forida 1993. Available from DoIt.

REFERENCE BOOKS ON RESERVE AT KURT WENDT ENGINEERING LIBRARY

V. Chvatal: "Linear programming", W. H. Freeman & Co., New York 1983.

S.-C. Fang & S. Puthenpura: "Linear optimization and extensions", Prentice Hall, Englewood Cliffs, NJ 1993.