

**MA 515 — MATHEMATICAL PROGRAMMING AND EXTENSIONS**  
**MWF 10:00–10:50 — CB345**

**INSTRUCTOR:** Carl Lee, 967 POT, 257-1405, lee@ms.uky.edu, <http://www.ms.uky.edu/~lee>.

**OFFICE HOURS:** MWF 9:00–9:50 and by appointment, since I realize that some of you will be unable to come at these times.

**TEXT:** I will prepare some course notes. The following books will be on reserve in the Mathematics Library: Chvátal, *Linear Programming*, and Nemhauser-Wolsey, *Integer and Combinatorial Optimization*.

**TOPICS:**

- Introduction
- Theorems of the Alternatives
- Duality
- The Simplex Method
- Linear Systems and Geometry
- Problem Formulations
- Networks
- Total Unimodularity
- Knapsack and Cutting Stock Problems
- Dantzig-Wolfe Decomposition
- Subgradient Optimization
- The Ellipsoid Method

**GRADING:**

- Homework: 50%
- Exams: 30%
- Final: 20%

**HOMEWORK:** Usually collected weekly. Problems are assigned to be solved. Searching the textbooks or the library for solutions is not permitted. On regular assignments you may discuss the problems with other current class members and with me. However, when it comes time for you to write up the solutions, I expect you to do this on your own. If you receive

assistance from someone else, include a written acknowledgment. Such an acknowledgment is a professional courtesy and will not affect your grade.

**EXAMS:** There will be two or three exams and a final exam.

**IMPORTANT DATES:**

Wednesday, August 23, First day of classes  
Tuesday, August 29, Last day to add a class  
Monday, September 4, Labor Day holiday—no class  
Wednesday, September 13, Last day to drop a class without a grade  
Friday, October 6, October break—no class  
Monday, October 16, Middle of the fall semester  
Friday, October 20, Last day to withdraw from a class  
Tuesday, November 7, Presidential election—no class  
Thursday–Saturday, November 23–25, Thanksgiving holiday—no class  
Friday, December 8, Last day of classes  
Monday, December 11, 10:30 a.m., Final exam.

**CHEATING AND PLAGIARISM:** The *minimum University penalty* for cheating and/or plagiarism is *a grade of E for the entire course*. It's not worth it and it is damaging to your self-integrity, so don't do it.