TUTORIALS

← BROWSE COURSE MATERIAL

PREREQUISITE SKILLS IN MICROSOFT® EXCEL

We will be using Microsoft Excel throughout the semester.

There are a number of excellent tools for solving optimization programs as part of a subject such as 15.053. We have selected Excel because of its broad applicability and power of expression, including a variety of graphical tools for visualizing data. For optimization, the most important “add-in” is Excel Solver, which can be used to solve a wide range of optimization problems.

The expressiveness of Excel comes at the cost of having a long learning curve. We do not (and should not) expect a mastery of Excel, or even anything close to mastery. However, students who have little or no experience with Excel should acquaint themselves with the fundamentals in the following areas:

- Getting started with Excel
- Managing workbooks
- Managing worksheets, cells, and cell data
- Summarizing data using formulas and functions
- Formatting worksheet elements
- Working with charts (graphs)
- Printing and exporting

For its enrolled students and staff, MIT provides free use of the software tutorial service Lynda.com. Many excellent tutorials for Excel can be found there.

COURSE TOPIC TUTORIALS

These tutorials were provided to students for background and supplemental study. Some are intended as skill refreshers, while others are on topics not covered in class.

Tutorial 1: Introduction to LP formulations (PDF - 2.4MB)

Tutorial 2: Algebraic formulations (PDF - 1.9MB)

Tutorial 3: Microsoft{{< sup "®" >}} Excel Solver techniques (PDF - 2.2MB)

Tutorial 4: LP transformation techniques (PDF - 1.1MB)

Tutorial 5: Sensitivity analysis in 2 dimensions (PDF)

Tutorial 6: Converting a linear program to standard form (PDF)

Tutorial 7: Degeneracy in linear programming (PDF)

Tutorial 8: 2-person 0-sum games (PDF - 2.9MB)

Tutorial 9: Transformations in integer programming (PDF)

Tutorial 10: Branch and bound (PDF) (Courtesy of Zachary Leung. Used with permission.)

Tutorial 11: Gomory cuts and a little more (PDF) (Courtesy of Zachary Leung. Used with permission.)