Mathematical Economics

Daisuke Oyama

www.oyama.e.u-tokyo.ac.jp/mathecon23

June 5, 2023

Outline

- Monday, Friday 10:25-12:10
  Class Room 7
  - June 5, 9, 12, 16, 19, 23, 26, 30
  - July 3, 7, 10, 14, 21
- Course webpage:
  http://www.oyama.e.u-tokyo.ac.jp/mathecon23/
- In this course, we study mathematical tools useful for advanced level economics, including important topics from convex analysis, as well as advanced topics from discrete mathematics such as lattices, supermodularity, and matroids.

Textbook

- R. V. Vohra, *Advanced Mathematical Economics*, Routledge, 2004.

Chapters

1. (Things to know)
2. Feasibility
3. Convex sets
4. Linear programming
5. (Non-linear programming)
6. (Fixed points)
7. Lattices and supermodularity
8. Matroids

Topics

1. Farkas' Lemma
2. Separating Hyperplane Theorems
3. Structure of Polyhedra
4. Lattices and Supermodularity
5. Cores of Convex Games
6. Matroids and Polymatroids
7. Choquet Integral

Other Information

- Grading:
  Final exam

  (Homeworks do not directly count.)

- Homework:
  Submit your homework through ITC-LMS.

- Office hours:
  Fridays 14:00-15:30, or by appointment
  10th floor, 1012