S1, 2016

Mathematics II

Tuesday, Friday 10:25-12:10

April 5, 2016

OYAMA Daisuke
Faculty of Economics
University of Tokyo
oyama@e.u-tokyo.ac.jp
www.oyama.e.u-tokyo.ac.jp

The aim of this course is to provide students with basic tools in Analysis that are needed in advanced level micro and macro economics. The course covers the main part of the Mathematical Appendix in Mas-Colell, Whinston, and Green.

Course information will be posted at

http://www.oyama.e.u-tokyo.ac.jp/mathii16/

Topics

1. Real numbers (Debreu 1.5)
2. Continuous functions and compact sets (MWG M.F; Debreu 1.6, 1.7)
3. Correspondences (MWG M.H; Debreu 1.8)
4. Differentiation in one variable
5. Differentiation in several variables (MWG M.A, M.B, M.E)
6. Convex sets and (quasi)concave functions (MWG M.C)
7. Negative (semi)definite matrices (MWG M.D)
8. Unconstrained maximization (MWG M.J)
9. Constrained maximization (MWG M.K)
10. Envelope theorem (MWG M.L)
11. Separating hyperplane theorems (MWG M.G, M.M)
12. Fixed point theorems (MWG M.I)
13. Dynamic programming (MWG M.N; Stokey-Lucas 4; Puterman 5, 6)

Textbook

- A. Mas-Colell, M.D. Whinston, and J.R. Green, *Microeconomic Theory*, 1995.

References

- G. Debreu, *Theory of Value*, Yale University Press, 1959.
- N.L. Stokey and R.E. Lucas, *Recursive Methods in Economic Dynamics*, Harvard University Press, 1989.
- M.L. Puterman, *Markov Decision Processes: Discrete Stochastic Dynamic Programming*, Wiley-Interscience, 2005.

Grading
Final exam

Office hours
Fridays 14:00-15:30 (starting on April ~~17~~ 8), or by appointment
10th floor, 1012