

**Econ 681 – Microeconomic Theory**  
**Steven A. Matthews, University of Pennsylvania**  
**August 28, 2018**

**Description.** This course is designed for undergraduate mathematical economics majors and Wharton PhD students. It covers neoclassical microeconomic theory, stressing methodology as well as fundamental results. The topics are listed on the next page.

**Prerequisites.** A strong background in multivariable calculus, analysis, probability theory, optimization, and intermediate microeconomics.

**Class Meetings.** TR, 10:30-12 am in EDUC 203

**Professor.** Steven Matthews <stevenma@econ.upenn.edu>

Office hours: Mondays, 3:30-5 pm in 618 PCPE

**Teaching Assistant.** Akihisa Kato <akato@sas.upenn.edu>, office 648 PCPE

Office Hours: Mondays, 12-2 pm in meeting room 208 PCPE

**Policy on Email.** Put “ECON 681” in the subject line when you email us.

**Homework.** Problem sets are due roughly every two weeks, graded on a scale 0-3. Late homework will not be graded. Study groups are good, but write up your solutions individually. Solutions will be posted ex post.

**Exams.** Two midterms and one cumulative final. All are closed book, notes, and devices. Midterm 2 covers the material discussed in class after Midterm 1.

**Grading.** Each midterm counts 30% and the final exam 40%, with homework counting in marginal cases. If you miss one midterm for an excused absence,<sup>1</sup> your grade will be calculated as 45% on the other midterm and 55% on the final.

**Course Materials.** Posted on Canvas: <http://canvas.upenn.edu>

**Required Text.** (JR) Jehle and Reny, *Advanced Microeconomic Theory*, 3<sup>rd</sup> ed.

**Supplementary Texts.** If you want to go more deeply into a topic, I suggest

- (MWG) Mas-Colell, Whinston and Green, *Microeconomic Theory*.

If you wish to brush up on intermediate micro, I suggest

- Varian, *Intermediate Microeconomics: A Modern Approach*.

If you wish to brush up on the relevant math, I suggest the JR Appendix,

- Simon and Blume, *Mathematics for Economists*, and
- The math tutorial of Martin Osborne:  
<https://mjo.osborne.economics.utoronto.ca/index.php/tutorial/index/1/int/i>.

---

<sup>1</sup>Excused absences and other course policies are defined at <https://economics.sas.upenn.edu/undergraduate/course-information/course-policies>.

**Important Dates.**

- No class on Oct 4 (Fall Break) and Nov 22 (Thanksgiving).
- Midterms 1 and 2 are in class on Tuesdays, Oct 2 and Nov 20.
- Final Exam on Monday, Dec 17, 9-11 am.

**Topics.** We will select topics from chapters 1-5 in JR. Roughly, we will cover the following:

1. Introduction: Economics and Mathematics
2. Consumer Theory
  - (a) Preferences and utility maximization
  - (b) Expenditure minimization and duality
  - (c) Demand functions: Slutsky equation and matrix
  - (d) Consumer surplus and compensating variation
3. Choice Under Uncertainty
  - (a) Expected utility
  - (b) Risk aversion
4. Producer Theory
  - (a) Technology
  - (b) Profit maximization
  - (c) Cost minimization and duality
5. Competitive Equilibrium
  - (a) Edgeworth boxes
  - (b) Existence and welfare theorems
  - (c) Arrow-Debreu and incomplete markets
6. Externalities and Public Goods
  - (a) Bargaining
  - (b) Pigouvian taxes
  - (c) Voluntary contribution
  - (d) Lindahl equilibrium