

Mathematical Economics 1
Econ 830-001
Fall 2019
Thursday, 7:20 – 10:00 pm
Enterprise Hall 274

Jonathan Schulz
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Carow Hall 01C
Fairfax Campus

OFFICE HOURS

Thursdays, 6pm-6:45pm in Carow Hall and gladly by appointment.

DESCRIPTION

Welcome to this course! The primary goal of the course is to provide an introduction to mathematical tools and applications widely used in economics. We will focus on models of economic equilibrium, multivariate optimization, and the classic microeconomics of individual and firm-level optimization. We'll close with the basics of general equilibrium theory.

I take elementary differential calculus, elementary integration, basic matrix/linear algebra (addition, multiplication, a little inversion), and univariate unconstrained optimization for granted.

COURSE MATERIAL

The two required textbooks for this course are:

Chiang and Wainwright (C/W), *Fundamental Methods of Mathematical Economics*, 2005, 4th edition, McGraw Hill;

Jehle and Reny (J/R), *Advanced Microeconomic Theory*, 2011, 3rd edition, Pearson

TENTATIVE SCHEDULE

- Week 1: Nature of Mathematical Economics
C/W Chapter 1, 2.1, 2.4, 3.1, 3.2, 9.1, 9.2
- Week 2: Equilibrium analysis in economics, Explosive Growth
C/W Chapter 8.1 – 8.6, 9.3 – 9.5
- Week 3: Multivariate Unconstrained Optimization
C/W Chapter 11.1 – 11.6
- Week 4: Constrained Optimization
C/W Chapter 12.1 – 12.5
- Week 5: Production Functions, Kuhn-Tucker, and the Envelope Theorem
C/W Chapter 12.6, 13.1, 13.5, 13.6
- Week 6: Mathematics for Economics Midterm Exam (October 3)
- Week 7: Consumer Theory 1
J/R Chapter 1
- Week 8: Consumer Theory 2
J/R Chapter 2
- Week 9: Consumer Theory 3: Intertemporal Choice
Handouts

Week 10: Theory of the Firm 1
J/R Chapter 3

Homework assignment due at start of week 11

Week 11: Theory of the Firm 2
J/R Chapter 3

Week 12: Partial Equilibrium
J/R Chapter 4 (possibly skipped)

Week 13: General Equilibrium 1
J/R 5.1

Week 14: Thanksgiving recess (November 28)

Week 15: General Equilibrium 2
J/R 5.2

Final Exam: Thursday December 12 from 7:30 pm to 10:15 pm

GRADING

Your final grade is based on an in-class midterm during week 6 and a final exam given during GMU's scheduled final exam time. There will also be one graded homework assignment. The homework assignment is a good preparation for the final exam questions. The weighting will be as follows:

Homework assignment:	10%
Midterm:	35%
Final exam:	55%

STUDENTS WITH DISABILITIES

Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit <http://ds.gmu.edu/> for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. *I am glad to make accommodations for students with disabilities.* Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu | Phone: (703) 993-2474

ACADEMIC INTEGRITY

It is expected that students adhere to the George Mason University Honor Code as it relates to integrity regarding coursework and grades. The Honor Code reads as follows: "To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the University Community have set forth this: Student members of the George Mason University community pledge not to cheat, plagiarize, steal and/or lie in matters related to academic work." More information about the Honor Code, including definitions of cheating, lying, and plagiarism, can be found at the Office of Academic Integrity website at <http://oai.gmu.edu>