University of Florida - Spring 2023

ECO 4401: Mathematical Economics
Syllabus

Instructor:	Don Tawanpitak	**Classroom:**	MAT 112
Email:	d.tawanpitak@ufl.edu	**Class time:**	T/R 11:45 AM - 1:40 PM
Office hour:	MAT 301A, T/R 10:30 - 11:30 AM		
Prerequisites:	Intermediate Microeconomics (ECO 3101) and Calculus I (MAC 2233)		
Textbook:	*Fundamental Methods in Mathematical Economics, 4^{th} Edition* by Alpha C. Chiang and Kevin Wainwright		

1 Course Description

This course introduces students to the mathematical tools useful in economic analysis. Topics covered include linear model and matrix algebra; derivative, limit, and continuity of functions; partial and total derivatives; comparative statics; unconstrained optimization; constrained optimization with equality and inequality constraint.

2 Grading Policy

Grades are calculated as Problem Sets (20%), Exam 1 (40%), and Exam 2 (40%).

2.1 Problem Sets

The problem sets' objective is to serve as practice questions. There will be eight problem sets. Each counts for 2.5 points toward the final grade. Students must submit their Problem Sets individually on Canvas. Blank or unreadable submissions will not be graded, and late submissions will not be accepted in any circumstance. The instructor will weigh the score primarily on the effort and understanding shown rather than the correctness. However, the instructor reserves the right to grade each Problem Set as he sees fit.

Problem Sets are due at 11:59 PM (i.e., before midnight) on the indicated dates. The instructor will hold a Problem Sets Review session prior to the due dates. Answer Keys will also be posted on Canvas on such Review dates.

The instructor expects students to get the full points (20%) from Problem Sets.

2.2 Exams

All exams will be in class, regular class time, on the following dates.

- Exam 1: Tuesday, March 7$^{\text{th}}$
- Exam 2: Tuesday, April 25$^{\text{th}}$

Students who cannot take exams on the dates above must notify the instructor 14 days in advance. A make-up exam is granted on a case-by-case basis. There are no practice exams.

2.3 Extra Credits

Students can receive extra credits from in-class participation at the instructor's discretion. There will be no other extra credits.

3 Grading Scale

- A : 92.0 - 100.0
- A− : 88.0 - 91.9
- B+ : 84.0 - 87.9
- B : 76.0 - 83.9
- B− : 72.0 - 75.9
- C+ : 68.0 - 71.9
- C : 60.0 - 67.9
- F : < 60.0

4 Course Outline

Part 1: Linear Models and Matrix Algebra

Lecture 1 (Jan 10$^{\text{th}}$) : Matrix Algebra I (Chapter 4)
Lecture 2 (Jan 12$^{\text{th}}$) : Matrix Algebra I (Chapter 4)
Lecture 3 (Jan 17$^{\text{th}}$) : Matrix Algebra II (Chapter 5)
Lecture 4 (Jan 19$^{\text{th}}$) : Matrix Algebra II (Chapter 5)
Lecture 5 (Jan 24$^{\text{th}}$) : Problem Sets 1 & 2 Review

Part 2: Differentiation and Comparative Statics

Lecture 6 (Jan 26$^{\text{th}}$) : Rules of Differentiation (Chapter 7)
- Problem Set 1 & 2 due
Lecture 7 (Jan 31$^{\text{st}}$) : Comparative Statics of General-Functions Models (Chapter 8)
Lecture 8 (Feb 2$^{\text{nd}}$) : Comparative Statics of General-Functions Models (Chapter 8)
Lecture 9 (Feb 7$^{\text{th}}$) : Problem Sets 3 & 4 Review

Part 3: Optimization Problems without Constraints

Lecture 10 (Feb 9th) : Optimization - Single Choice Variable (Chapter 9)

- Problem Set 3 & 4 due

Lecture 11 (Feb 14th) : Exponential and Logarithmic Functions (Chapter 10)

Lecture 12 (Feb 16th) : Optimization - Two or More Choice Variables (Chapter 11)

Lecture 13 (Feb 21st) : Optimization - Two or More Choice Variables (Chapter 11)

Lecture 14 (Feb 23rd) : Optimization - Two or More Choice Variables (Chapter 11)

Lecture 15 (Feb 28th) : Problem Sets 5 & 6 Review

March 2nd : **(No class)**

- Problem Set 5 & 6 due

March 7th : **Exam 1**

March 9th : **Exam 1 Review (*if no one missed Exam 1*)**

Spring Break

Part 4: Optimization Problems with Constraints

Lecture 16 (Mar 21st) : Optimization with Equality Constraints (Chapter 12)

Lecture 17 (Mar 23rd) : Optimization with Equality Constraints (Chapter 12)

Lecture 18 (Mar 28th) : Optimization with Equality Constraints (Chapter 12)

Lecture 19 (Mar 30th) : Optimization with Inequality Constraints (Chapter 13)

Lecture 20 (Apr 4th) : Optimization with Inequality Constraints (Chapter 13)

Lecture 21 (Apr 6th) : Optimization with Inequality Constraints (Chapter 13)

Lecture 22 (Apr 11th) : Optimization with Inequality Constraints (Chapter 13)

Lecture 23 (Apr 13th) : Optimization with Inequality Constraints (Chapter 13)

Lecture 24 (Apr 18th) : Problem Set 7 & 8 Review

April 20th : **(No class)**

- Problem Set 7 & 8 due

April 25th : **Final Exam**