



## **ECON 3620 – 070: Mathematics for Economists**

3 Credit Hours

Fall Semester 2019

Tuesday 6:00PM-9:00PM; SANDY 204

**Instructor:** Kevin Conner

**Email:** kevin.conner@utah.edu

**Office Hours:** By appointment and following each class

**Office Location:** Economics Department (4th floor GC), graduate student desks, section 5  
(send an email if you have trouble finding me)

### **Required Materials**

Chiang, A., & Wainwright K. (2004). Fundamental Methods of Mathematical Economics (Fourth Edition). ISBN-10: 0070109109, ISBN-13: 97780070109100.

Other supplemental resources will be made available through the course's Canvas page as necessary.

### **Course Description**

This course is intended to teach you some of the most important mathematical tools used in intermediate and advanced economics courses. We will primarily cover topics from linear algebra and calculus with a focus on methods for solving optimization problems. Concepts may be taught in a more “pure math” or abstract way than you may be used to, but it will always be related back to important economic models or principles.

### **Prerequisites**

ECON 2010 OR BUS 2010 AND ECON 2020\*

MATH 1050 OR 1080 OR 1090\*

\*Relevant exam scores may be substituted. See the [course catalog](#) for more information.

### **Requirements**

This course meets BS Quantitative Intensive requirement

This course is a prerequisite for ECON 4010 and ECON 4650

### **Course Outcomes**

By the end of this course you will:

- Know the basic elements of mathematical models and their limitations.
- Be able to solve some of the optimization problems that arise in economics.
- Be able to interpret mathematical economics models, and maybe build some of your own!

### **Teaching and Learning Methods**

Class sessions will be a mix of conventional lecture and in-class group work. Expect that I will be lecturing a little more than half of the time, with the rest being composed of group activities. Because of the important group activity elements of this course, it is especially important that you keep up with assignments.

## Assignments

There are five major things that you will need to complete this semester:

- *Office Hour Visit:* I would like each of you to briefly meet with me individually sometime in the first two weeks of class. There are two purposes for this, first, I want to make sure all of you know where my desk is and second, I want to get to know all of you a bit. This will be factored into the in-class participation grade.
- *Problem Sets:* For each section we cover, you will be required to complete 3-10 problems. I will specify which problems in a Canvas message after each class. **In general, these problems will not be graded.** I will only be checking for completion. Despite this, it is very important to complete them correctly. The same sort of problems will be on the exams and quizzes. The only way to get better at solving problems is to do a bunch of problems!
- *Quizzes:* At the beginning of class there will typically be a quiz over material covered in the previous class. It will be short, only 1-4 questions. This is primarily intended to let me know how well all of you are doing and if we need to spend some more time on a particular topic.
- *Midterm Exam:* A written exam to take place over all material covered in the first half of the course. I will provide a study guide. This exam will be administered about halfway through the course. You will have the opportunity to correct the mistakes you made on the exam to receive partial credit. It is very important to me that the exam should provide you with an opportunity to further your understanding of the material even if you initially received a poor grade.
- *Final Exam:* A written exam to take place over all material covered in the course. Just like the midterm, I will provide a study guide, and you will have an opportunity to correct your exam to receive partial credit. To allow time for corrections This exam will be administered a week before the end of the class. This will give me time to grade and return it to you. Revisions will only be accepted in person on the final day of class.

## Grading Policy (Evaluation Methods & Criteria)

Grades will be determined according to the following weights (subject to change)

- In Class Participation 10%
- Problem Sets 15%
- Quizzes 20%
- Midterm 25%
- Final Exam 30%

Grading Scale: E (0-59), D- (60-62), D (63-66), D+ (67-69), C- (70-72), C (73-76), C+ (77-79), B- (80-82), B (83-86), B+ (87-89), A- (90-92), A, (93-100)

## Important Dates

Classes begin	Mon., August 19
Last day to add, drop (delete), elect CR/NC, or audit classes	Fri., August 30
Labor Day	Mon., September 2
Midterm Exam (Tentative)	Tues., August 1
Fall Break	Sun.-Sun., October 6-13
Last day to withdraw from classes	Fri., October 18
Thanksgiving Break	Thurs.-Sun., November 28- December 1
Final Exam	Tues., November 26
Last day of Class	Tues., December 3
Holiday Recess	Sat., December 14 - Sun., January 6

## Course Outline

- Introduction (Week 1)
  - (Week 1) Models and Mathematical Economics
  - (Week 1) Algebra and Graphing Review
  - (Week 2) Systems of Equations
- Linear Algebra
  - (Week 3) Vectors
  - (Week 3) Matrices
  - (Week 4) Inverses
  - (Week 5) Cramer's Rule
- Calculus
  - (Week 6) Limits and Derivatives
  - (Week 9) Comparative Statics
  - (Week 10) Bivariate Optimization
  - (Week 11) Partial Differentiation
  - (Weeks 12 & 13) Integration
- Extra Topics (time permitting)
  - (Week 11) Total Differentiation
  - (Week 16) An introduction to differential equations

*Note: This syllabus is intended to serve as an outline and guide for our course. Please note that it may be modified with reasonable notice. I may also modify the course schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements. The course canvas page has all readings, assignments, and other details organized by week*

## Course Policies

1. *Attendance and Participation:* No specific grade will be attached to attendance, nor will attendance be taken. However, in part due to the participation grade and in-class quizzes, it will be very difficult to do well in this course without regular attendance.
2. *Electronic Devices:* Please avoid using electronic devices for non-class related activities during class time.
3. *Late Work and Make Up Exams:* Late assignments will be accepted. However, this material is on the weekly quizzes. So, it is still important to complete assignments on time. No makeup quizzes or exams will be provided, but the lowest quiz grade will be dropped. This policy may be waived in the case of prior arrangement with me, an emergency, and as required by university policy.

## University Policies

1. *The Americans with Disabilities Act*: The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, (801) 581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability & Access.

2. *Addressing Sexual Misconduct*: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776.

3. *Faculty and Student Responsibilities*: All students are expected to maintain professional behavior in the classroom setting, according to the Student Code (Policy 6-400), spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations (Policy 6-316), it is the faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.

4. *Student Academic Conduct*: In order to ensure that the highest standards of academic conduct are promoted and supported at the university, students must adhere to generally accepted standards of academic honesty, including but not limited to refraining from cheating, plagiarizing, research misconduct misrepresenting one's work, and/or inappropriately collaborating. Complete policies available at: <https://regulations.utah.edu/academics/guides/students/index.php>

5. *Student Wellness*: Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness - [ww.wellness.utah.edu](http://ww.wellness.utah.edu); 801-581-7776.

6. *Safety Statement*: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit [safeu.utah.edu](http://safeu.utah.edu).