MATHEMATICAL ECONOMICS
Fall 2020

ECON 3372: CRN 13218

1 Course Information

Time: Online and Asynchronous

Instructor: Dr. John Gibson

Office Hours: Virtual via Blackboard Collaborate: M/W 2:00 pm - 3:00 pm or by appointment

E-mail: jdgibson@utep.edu

Prerequisite: See Academic Catalog

Catalog Description: ECON 3372 provides a survey of the mathematical methods that form the foundation of any practicing economist's technical tool kit. Algebra and introductory Calculus will be covered, however material will presented through real-world economic examples whenever possible.

Course Objective: The development of economic theory requires the ability to recast complicated ideas in mathematical form. Often, in introductory classes, this recasting of ideas takes the form of graphical analysis. While graphical analysis can convey may important concepts, one often needs to work with more complicated expressions. This requires the use of equations and more sophisticated analysis. This course is intended to provide students with an introduction to the mathematical methods often used by economists, including basic algebra, functions, introductory Calculus, and unconstrained and constrained optimization.

Method of Instruction: This course is designed using a modular formate. Each chapter that we cover is treated as a separate module with its own set of lecture videos, lecture notes, and homework assignments (hosted via Blackboard). While the videos I post serve as your primary

lecture material for the course, it is still important for you to read the textbook. I will also hold live virtual office hours through Blackboard collaborate every Monday and Wednesday from 2:00 pm to 3:00 pm. These live sessions will give you a time to ask questions and review concepts covered in the lecture videos.

Policy on Academic Honesty: All students are responsible for knowing and adhering to UTEP's Policy on Academic Honesty: (`https://www.utep.edu/student-affairs/osccr/student-conduct/academic-integrity.html`).

2 Required Textbook

- Essential Mathematics for Economic Analysis, 5th Edition, by Knut Sydaeter and Peter Hammond, Pearson, 2016. ISBN-13: 978-1-292-07461-0.

3 Technology Requirements

Course content is delivered via the Internet through the Blackboard learning management system. Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Google Chrome and Mozilla Firefox are the best browsers for Blackboard; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

You will need to have access to a computer/laptop, scanner, a webcam, and a microphone. You will need to download or update Adobe Acrobat Reader to open your assignments. All lecture videos should run within your web browser, so there should be no need for a separate video application.

IMPORTANT: If you encounter technical difficulties beyond your scope of trouble shooting, please contact the UTEP Help Desk as they are trained specifically in assisting with technical needs of students. Please do not contact me for this type of assistance. The Help Desk is much better equipped than I am to assist you!

4 Course Communication

Because this is an online class, we will not see each other in the ways you may be accustom: class time, small group meetings, and office hours. However, there are a number of ways we can keep the communication channels open:

- **Office Hours:** We will not be able to meet on campus, but I will still have office hours for your questions and comments about the course. My office hours will be held on Blackboard Collaborate on Mondays and Wednesdays from 2pm to 3pm
- **Review Sessions:** I will hold live virtual review sessions during virtual office hours on the week before Exam 1 (September 7 and 9) and the week before Exam 2 (October 5 and 7). You will be assigned a review session for each of the exams and your attendance and participation will count to your grade (see Section 7 for a discussion of the grading policy).
- **Email:** UTEP e-mail is the best way to contact me. I usually respond to e-mails within a couple hours. If you have not received a response from me in 24-hours, please send another email as I likely did not receive the first (don't worry, you will not bother me with multiple e-mails).
- **Home Page:** The homepage of our Blackboard course site is where all of our course content lives. You will be able to navigate chapter-specific content folders to watch videos and read lecture notes. You will also be able to access your homework assignments through this area.
- **Announcements:** I will also post important updates as announcements on Blackboard. You should check the Blackboard course site at least once per day.

5 Learning Objectives

Throughout this course you will develop the skills necessary to:

- Gain confidence working with basic and intermediate algebraic tools/techniques.
- Recast economic relationships in equation form and manipulate them.
- Gain a deeper understanding of functions.

- Understand the integral role they played by functions in economic modeling.
- Learn the basic rules of differentiation.
- Learn how to maximize functions of many variables
- Introduces constraints into maximization problems
- Relate the general concept of maximization to the economic concepts of utility (or profit) maximization.

6 Course Outline

The course outline below provides a general plan for the course; deviations may be necessary:

- Chapter 2. Algebra (August 24 - 26)
- Chapter 3. Equations (August 31 - September 2)
- Chapter 4. Functions of One Variable (September 10 - 14)
- Chapter 5. Properties of Functions (September 16 - 21)
- Chapter 6. Differentiation (September 23 - 30)
- Chapter 7. Derivatives in Use (October 5 - 12)
- Chapter 8. Optimization (October 14 - 21)
- Chapter 11. Functions of Many Variables (October 26 - November 2)
- Chapter 13. Multivariable Optimization (November 4 - November 11)
- Chapter 14. Constrained Optimization (November 16 - December 2)

7 Grading Policy

Grades will be determined as follows:

- Problem Sets - 20 points (Various Times)
- Virtual Review Sessions - 5 points (2x per semester)
- Exam 1 - 25 points (September 16)
- Exam 2 - 25 points (October 14)
- Final Exam - 25 points (TBD by University)
- Total = 100 points

Final letter grades will be assigned based on the following scale:

- A, 90 to 100
- B, 80 to 89
- C, 70 to 79
- D, 60 to 69
- F, Below 60

Extra credit questions will be included on the three exams at the discretion of the instructor. There will not be any additional extra credit other than that specified above. **Do not contact me requesting additional extra credit assignments.**

8 Homework:

I will post a problem set for each chapter on Blackboard. You are to complete this assignment, scan your answers, and return via email prior to the due date (listed at the top of each problem set).

9 Exams

Our first two exams will be held in UTEP's face-to-face proctoring center on September 16 and October 14. This will allow us to take our first two exams in a traditional environment, while maintaining social distancing guidelines. The exams will be open book and open note and they will be given 1 hour and 15 minutes to complete the exam. I will provide you the time of the exam once I am able to schedule it with the face-to-face proctoring center. You should plan to arrive at least 5 to 10 minutes prior to the start of the exam. If you are unable to take the exam in person, please let me know as soon as possible so that we can schedule your remote exam. Students taking these exams remotely will have 1 hour and 30 minute from the time I email their exam to return their scanned responses. Failure to meet this time limit will result in a loss of points and may be treated as a missed exam. All students will take the final exam remotely.

There will be absolutely no make-up exams. If you have a **valid reason** for missing one exam, then the exam will simply be dropped. If a valid reason causes you to miss the final exam, please notify me in person or by e-mail as soon as possible and bring documentation of the emergency at the earliest possible time. In this case, you will be informed of the decision within one week of receipt of documentation. If a make-up exam for the final is to be given, you will receive the grade of incomplete for the course and a make-up exam will be scheduled.

Valid reasons for missing an exam include a documented medical illness that prevents you from taking the exam, a death in your immediate family, or a documented mandatory court date. On the other hand being confused about the date or time of the exam is NOT a valid reason for missing an exam.

9.1 Virtual Review Sessions

We will have virtual review sessions during our office hours the week before our first and second exams. You are required to attend one virtual review session for each exam. I will assign half of the class to Monday and the other half to Wednesday. If you have a preference between Monday and Wednesday sessions please let me know by Wednesday, September 2nd. You should come to these review sessions prepared to work problems, answer questions, and most importantly, ask me questions. A subject like Mathematical Economics can be very challenging online, and these review sessions will help provide real-time interaction and feedback. Also, keep in mind that you can always stop by during the live virtual office hours throughout the semester if you have additional questions.

10 Other Important Information

10.1 Students With Disabilities

The Center for Accommodations and Support Services (CASS) aspires to provide students with disabilities, accommodations and support services to help them pursue their academic, graduation, and career goals. If you have a disability and believe you may need services, you are encouraged

to contact the center to discuss your needs with a counselor. All discussions and documentation are kept confidential. Contact: Monday through Friday 8:00 am - 5:00 pm Phone: (915)747-5148. Location: Union Building East Room 106. E-mail: cass@utep.edu

10.2 NETIQUETTE

As we know, sometimes communication online can be challenging. It's possible to miscommunicate what we mean or to misunderstand what our classmates mean given the lack of body language and immediate feedback. Therefore, please keep these netiquette (network etiquette) guidelines in mind. Failure to observe them may result in disciplinary action.

- Aways consider the audience. This is a college-level course; therefore, all communication should reflect polite consideration of other's ideas.
- Respect and courtesy must be provided to classmates and to the instructor at all times. No harassment or inappropriate postings or comments will be tolerated.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on these online spaces is intended for classmates and the professor only. Please do not copy documents or video files and paste them to a publicly accessible website, blog, or other space.

10.3 Attendance and Participation

Attendance in the course is determined by participation in the learning activities of the course. Your participation in the course is important not only for your learning and success but also to create a community of learners. Participation is determined by the completion of the following activities:

- Reading/Viewing all course materials to ensure understanding of assignment requirements
- Completing all homework problem sets and turning them in prior to their respective due date
- Attending two virtual review sessions throughout the semester (one prior to Exam 1 and one prior to Exam 2)

11 COVID-19 PRECAUTIONS

You must STAY AT HOME and REPORT if you (1) have been diagnosed with COVID-19, (2) are experiencing COVID-19 symptoms, or (3) have had recent contact with a person who has received a positive coronavirus test. Reports should be made at screening.utep.edu. If you know of anyone who should report on any of these three criteria, you should encourage them to do so. If the individual cannot report, you can report on their behalf by sending an email to COVIDaction@utep.edu.

For each day that you attend campus (for any reason) you must complete the questions on the UTEP screening website (screening.utep.edu) prior to arriving on campus. The website will verify if you are permitted to come to campus. Under no circumstances should anyone come to class when feeling ill or exhibiting any of the known COVID-19 symptoms. Students are advised to minimize the number of encounters with others and to wear face coverings (nose and mouth) when in common areas or when others are present.

11.1 Syllabus

This syllabus contains important information about this class including exam dates, coverage of course material, class policies, and my contact information. Students are responsible for reading this syllabus and understanding the information contained in it.

11.2 Course Evaluation

Your constructive assessment of this course plays an indispensable role in shaping education at UTEP. Upon completing the course, please take the time to fill out the online course evaluation.

This course syllabus provides a general plan for the course; deviations may be necessary.